

Attachment L

TRANSCRIPT OF PUBLIC HEARING
Municipal, Commercial, and Industrial Lagoon Regulations

August 19, 2004

Memorial Hall - Topeka, Kansas

Hearing Officer: Rod Geisler

Rod Geisler: Good evening. For the record it's a few minutes after 7:00 PM August 19th, 2004. We're at the Memorial Hall Auditorium in Topeka, Kansas. The purpose of this evening's hearing is to consider proposed new administrative regulations addressing municipal, commercial, and industrial wastewater lagoon requirements.

My name is Rod Geisler. I am a Section Chief within the Kansas Department of Health and Environment Municipal Program Section in the Bureau of Water. I am this evening's hearing officer. I have been appointed by Secretary Roderick Bremby to both represent him at this hearing and conduct this evening's hearing. I would like to welcome all of you to this hearing. I have some standard remarks that I am reading from. I will briefly outline the procedures for this hearing and then open the hearing to receive comments, any input, recommendations, any information from any of you who are present who wish to either provide oral comments or present written information at this hearing. The purpose of this hearing is for the Department to receive comments, input, recommendations, and information from the regulated community, other interested parties, and the general public regarding the regulations as proposed. The draft proposed regulations were placed on public notice June 3, 2004, with that public notice being published in the Kansas Register on that same date. The draft regulations have been posted on the KDHE web site also since about that same point in time. The hearing this evening is not intended to be a forum for debate but rather to allow you to provide this Department with your comments, recommendations and any information that have that you would like to bring to the attention of the Department and have us consider regarding the proposed regulations. This is the first of three public hearings. There will also be public hearings conducted next week in Dodge City and also in Wichita.

As all of you have entered, you should have registered at the table near the entrance and should have completed a brief form to register your attendance and to also indicate whether you wish to present either oral or written testimony at this hearing. I will later use these forms to call on people to present their testimony and also any documents you desire to provide for our review and consideration. These forms will also be used by the Department to advise interested parties as to the Secretary's decision in regard to the proposed regulations. So make sure you have provided your complete and accurate mailing address and that's what we will use to contact you. Other members of KDHE staff that are here tonight are Don

Carlson a Section Chief in the Industrial Program Section and also Karl Mueldener who is the Director of the Bureau of Water.

The hearing is being tape recorded. The tape will be transcribed and will become part of the record which the Secretary will then consider in making his decision regarding the proposed regulations. As the proceedings are being taped, all testimony and comments, must be made at the microphone. So if you wish to make comments I will call you and step aside and we will all speak from the same spot.

Only testimony presented at the microphone will be considered a part of the official hearing record. There are three people that signed their names as attending tonight and one that wished to make a presentation. So with that, there will be no time limit imposed on the length of remarks. When you come to the microphone identify yourself by providing both your name and address to help us further identify you in the future. If there are no questions as to how the hearing will be conducted then we will begin.

At this time I will open the proceedings and begin taking testimony by calling those individuals to the microphone that have been identified from the registration forms as wishing to either make an oral presentation or to present written information this evening. The first individual indicating they wish to speak is Bob Myers representing the City of Newton.

Bob Meyers:

My name is Bob Meyers and I am the City Attorney for the City of Newton. Thank you for the opportunity to address you today in relation to the proposed new administrative regulations pertaining to municipal, commercial, and industrial wastewater lagoons.

I am proud to be able to report to you that the City of Newton, both through the Newton City Commission and through City staff, has been one of the leaders and driving forces in the South Central Kansas region on issues of water quality.

This is an issue which is very important to us. The City of Newton has been a public water supplier for over 100 years and for years we have supplied the City of North Newton and a rural water district with treated drinking water. In recent years and through cooperative efforts with several of our neighbors, those being the Cities of North Newton, Halstead and Sedgwick, we together formed a joint wholesale water supply district which established additional water wells with the water being transported to our Newton water treatment facility and then distributed among our member cities. In 2002 this innovative project received the Project Of The Year award from the Kansas Consulting Engineers Association.

We derive our drinking water from the Equus Beds groundwater aquifer which underlies portions of Harvey, Sedgwick, Reno, and McPherson Counties in South Central Kansas. Newton is one of twenty-five cities, plus three rural water districts, for whom the Equus Beds is either the sole source or a principal source of drinking water. Numerous farm families obtain their water directly from the aquifer, either for their own drinking water or for the water essential to serve their livestock or water their crops.

Altogether, the Equus Beds Aquifer supplies high quality drinking water for approximately 500,000 Kansans, or approximately 20% of the State's population. It supplies essential water resources for perhaps an even larger percentage of the State's business and industrial base. No other groundwater aquifer in the State is relied upon as a drinking water resource to anywhere near the same extent as the Equus Beds.

One of the five defined groundwater aquifer regions in the State of Kansas, the Equus Beds Aquifer is unique. First, as noted, no other groundwater aquifer in the State is relied upon as extensively as a drinking water resource. Second, it is the most vulnerable to pollution since a significant portion of the aquifer is relatively close to the surface of the ground and in many areas is overlain by sandy or highly porous soils through which pollutants can readily pass.

Portions of the aquifer have already sustained significant pollution from past activities which were not well regulated at all. The taxpayers of the State of Kansas have already spent considerable sums of money attempting to deal with this past pollution, and we will continue to spend money addressing these problems for the foreseeable future.

We cannot afford to expose the aquifer to further pollution, either from a public health standpoint or from an economic standpoint, particularly when there is reasonable, affordable technology which exists to provide needed protections.

Prior to 1998 when it appeared that Kansas may have become a desired location for large-scale swine operations, enough public concern developed to prompt the Kansas Legislature to undertake a study about the safety and adequacy of lagoon systems as repositories for wastewater. The Kansas State Research and Extension was then commissioned to conduct a three-year scientific study, which included monitoring and performance testing of lagoon systems all over the State of Kansas.

Key findings which resulted from the K-State study included the following:

1. Lagoon systems in Kansas of various types were found to be fairly

consistent in terms of their seepage rates, referring to the seepage of lagoon contents through bottom of the lagoon system. The good news was that lagoons generally performed well with most seepage rates being small. The bad news was that all lagoon systems do leak, and that seepage rates while small were not negligible.

2. Even with low seepage rates, high concentrations of nutrients in effluent flowing into lagoon systems can cause a significant movement of nitrogen and other components into the underlying soils. Some nutrients (such as ammonium) typically remain within a relatively shallow zone near the bottom of the lagoon, while others (such as chloride) will penetrate to greater depths and readily move into shallow groundwater.
3. The risk a lagoon system may pose to underlying groundwater is very site-specific and dependent upon a number of factors, such as: a lagoon's actual seepage rate; the concentration of the waste; the types of soils and their properties beneath the lagoon; the depth from the bottom of the lagoon to groundwater; and the length of time of use (or expected life) of the lagoon.
4. One of the greatest risks lagoon systems pose for groundwater contamination occurs after the end of its useful life and after it is closed or abandoned.

In addition to pointing to aspects of lagoon systems which were not currently being addressed by regulations, this study also illustrated that a one-size-fits-all approach to lagoon system regulation was inappropriate, that lagoon types and the conditions present at their prospective locations were significant factors in terms of what is necessary (or what is not necessary) in order to protect the environment. In this regard, the K-State researchers concluded:

“For regulatory purposes, site specific design specifications are desirable rather than a uniform maximum seepage rate applied statewide.”

In June 2000 the City of Newton hosted an Environmental Forum following the release of the results of the K-State study. At that forum, then KDHE Secretary Clyde Graeber announced that KDHE was proceeding immediately with the development of science-based, site-specific regulations for lagoons systems. However, for whatever reason, those regulations were not then forthcoming.

We commend current KDHE Secretary Bremby and the KDHE staff for resurrecting this initiative.

The City of Newton strongly supports the concept of developing environmental regulations and standards on a science-based, site-specific basis. In the area of water quality, we have a large disparity just within the borders of our State as to geographic, geologic and other environmental conditions and as to the particular public health and safety needs.

If the science exists to support the implementation of site-specific regulations of any type, there is simply no reason not to so proceed. The issue of water quality is too complex and is too important to be governed by inefficient and often unfair standards which are uniform only for the sake of convenience of uniformity.

We had the opportunity to attend a prior public session conducted by KDHE in which an outline of the proposed regulations was reviewed. We support the concepts and objectives contained in the proposed regulations and believe that this represents a reasonable approach to tailor the regulations, particularly as they would be applicable to sensitive groundwater areas such as the Equus Beds.

In particular, I offer the following comments as to the proposed regulations:

- The requirement of a minimum of a 10-foot separation between the bottom of a lagoon and the top of any underlying groundwater is not an overly stringent requirement, and any lagoon which is that close to the groundwater will present a significant risk to the groundwater.
- The enhanced lagoon construction standards for sensitive groundwater areas, and the further enhancement of those standards for lagoon systems constructed over the Equus Beds, is abundantly justified based upon the critical importance of these groundwater resources to the future public and economic health and vitality of our State and based upon their vulnerability.
- However, those enhanced standards do not appear to be overly protective. They will not eliminate the threat of contamination from lagoon systems. Seepage rates can exceed their estimates. Lagoon liners can fail or have their integrity impaired through casualty or misuse. Overflow events can discharge lagoon contents onto unprotected soils and thereby circumvent protective liners. Thus, unless site-specific factors demonstrate otherwise, it will be important that lagoon systems in close proximity to groundwater areas be required to include monitoring wells so that any pollution to the groundwater which may occur can be promptly detected and so that remedial measures can be quickly implemented.

- The need for closure plans and the close supervision of lagoon closures is critical.
 - As noted in the K-State study, the greatest danger a lagoon system poses to the groundwater is after it is no longer being actively used.
 - I do not see that the proposed regulations include a bonding requirement to guarantee at the time of the original permitting of a lagoon system that the funds will be present at the end to carry out a proper lagoon closure, and the same may well be cost-prohibitive. However, we feel it will be important to develop some other means to guarantee that closures will be carried out. One possible option in this regard would be the development of a closure trust fund similar to what has been used for funding the removal of underground storage tanks.
- We support the inclusion in the proposed regulations of the availability of a variance from specific regulatory requirements. While the burden would be rightly on the applicant to make the appropriate showings, it is consistent with the intent for requirements to be tailored to specific site conditions that an applicant have the ability to demonstrate that local conditions do not present the danger which a particular requirements is intended to address, or to demonstrate that new technologies will provide the protections needed.
- We urge the need for continued monitoring and research regarding the performance and adequacy of synthetic liners, and the continued consideration of further modifications to these regulations based upon experience and upon advancements in technology.

Finally the regulations which are developed for municipal, commercial, and industrial lagoons should then serve as the model on which regulations next need to be developed for agricultural lagoons.

While we were dismayed several years ago when it appeared the initial efforts by KDHE to develop these regulations has been stalled, once these efforts were resurrected we have been pleased to see, and we commend KDHE, for the careful process through which it has gone about the development of the current proposed administrative regulations. Extensive efforts have been made to solicit public input and input from municipalities, industry and other potentially affected parties regarding the content of these regulations.

The City of Newton was pleased to be asked to host one of these regional forums at which KDHE staff reviewed the draft regulations as then in development and solicited feedback. I am aware that KDHE has given serious consideration to suggestions and criticisms regarding those draft regulations and made changes based upon that feedback. I think it is extraordinary that KDHE administration and staff have undertaken to the extent they have these kinds of efforts to obtain input into the development of these regulations.

Thank you very much for the opportunity to address you in these critically important efforts.

Rod Geisler:

Thank you.

With that, no one else had indicated on their sign-in forms a desire to make an oral presentation so it is open to anyone else who would care to come up and make any remarks into the record, and if not then, that will conclude the testimony portion of the hearing.

The process that now takes place is that KDHE staff will transcribe the tape, review the testimony and any other information received this evening, review information submitted during the public notice period and from other hearings that will be held next week, identify the various issues, concerns, and recommendations raised, and prepare a responsiveness summary addressing technical, statutory, regulatory, or environmental issues along with staff's recommendations. The responsiveness summary will then be directed to Secretary Bremby for review and consideration. The Secretary then renders a decision regarding changes to the proposed regulations. Those individuals participating at this hearing and who have previously submitted comments to KDHE for consideration will be notified of the Secretary's decision. Again, I would like to remind you that if you desire to be notified of the Secretary's decision, we need to have you fill out the registration form with your address prior to the conclusion of this hearing. The deadline for submitting written comments regarding the proposed regulations has been extended and now the closing date to submit written comments is the close of business September 10th, 2004.

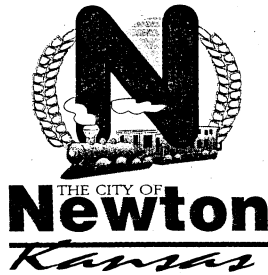
With that Secretary Bremby and I would like to thank you for coming to the hearing tonight and also for providing your input. One more time, if anyone would like make any remarks the record is open, if not, the hearing is closed at 7:21 PM. Thank you.

HEARING ATTENDANCE

Bob Myers City of Newton 201 E. 6th P.O. Box 426 Newton, KS 67114 Oral Comments.	LaVene Brenden Bartlett & West Engineers 1200 SW Executive Drive Topeka, KS 66615
Bruce Caler Westar Energy 818 Kansas Ave. Topeka, KS 66601	

Robert D. Myers
City Attorney

316/284-6018
316/283-7159 fax



201 E 6th • PO Box 426 • Newton, Kansas 67114-0426
E-mail: bmyers@newtonkansas.com

August 26, 2004

*Hand delivered to
Karl Muehlbauer by
Bob Myers on 26 Aug. 04
KM*

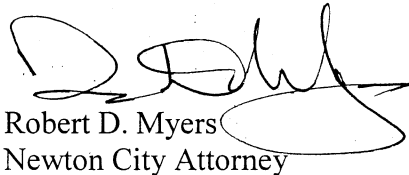
Mr. Don Carlson
Kansas Department of Health and Environment
Bureau of Water
1000 SW Jackson, Suite 420
Topeka KS 66612-1367

Re: Proposed Administrative Regulations -- Municipal, Commercial and Industrial
Wastewater Lagoons

Dear Mr. Carlson:

Enclosed for your records is the text of my testimony offered at the public hearing in Topeka on August 19, 2004, regarding these proposed new administrative regulations.

Best regards,



Robert D. Myers
Newton City Attorney

RDM:alt

Enclosure

Testimony Before The
KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
In Relation To The
PROPOSED NEW ADMINISTRATIVE REGULATIONS
(MUNICIPAL, COMMERCIAL AND INDUSTRIAL WASTEWATER LAGOONS)

by

Bob Myers, City Attorney
City of Newton, Kansas

August 19, 2004

My name is Bob Myers and I am the City Attorney for the City of Newton. Thank you for the opportunity to address you today in relation to the proposed new administrative regulations pertaining to municipal, commercial and industrial wastewater lagoons.

I am proud to be able to report to you that the City of Newton, both through the Newton City Commission and through City staff, has been one of the leaders and driving forces in the South Central Kansas region on issues of water quality.

This is an issue which is very important to us. The City of Newton has been a public water supplier for over 100 years and for years we have supplied the City of North Newton and a rural water district with treated drinking water. In recent years, and through cooperative efforts with several of our neighbors, those being the Cities of North Newton, Halstead and Sedgwick, we together formed a joint wholesale water supply district which established additional water wells with the water being transported to our Newton water treatment facility and then distributed among our member cities. In 2002 this innovative project received the Project Of The Year award from the Kansas Consulting Engineers Association.

We derive our drinking water from the Equus Beds groundwater aquifer which underlies portions of Harvey, Sedgwick, Reno and McPherson Counties in South Central Kansas. Newton is one of twenty-five cities, plus three rural water districts, for whom the Equus Beds is either the sole source or a principal source of drinking water. Numerous farm families obtain their water directly from the aquifer, either for their own drinking water or for the water essential to serve their livestock or water their crops.

Altogether, the Equus Beds aquifer supplies high quality drinking water for approximately 500,000 Kansans, or approximately 20% of the State's population. It supplies essential water resources for perhaps an even larger percentage of the State's business and industrial base. No other groundwater aquifer in the State is relied upon as a drinking water resource to anywhere near the same extent as the Equus Beds.

Of the five defined groundwater aquifer regions in the State of Kansas, the Equus Beds aquifer is unique. First, as noted, no other groundwater aquifer in the State is relied upon as extensively as a drinking water resource. Second, it is the most vulnerable to pollution since a significant portion of the aquifer is relatively close to the surface of the ground and in many areas is overlain by sandy or other highly porous soils through which pollutants can readily pass.

Portions of the aquifer have already sustained significant pollution from past activities which were not well regulated or which were not regulated at all. The taxpayers of the State of Kansas have already spent considerable sums of money attempting to deal with this past pollution, and we will continue to spend money addressing those problems for the foreseeable future.

We cannot afford to expose the aquifer to further pollution, either from a public health standpoint or from an economic standpoint, particularly when there is reasonable, affordable technology which exists to provide needed protections.

Prior to 1998 when it appeared that Kansas may have become a desired location for large-scale swine operations, enough public concern developed to prompt the Kansas Legislature to undertake a study about the safety and adequacy of lagoon systems as repositories for wastewater. The Kansas State Research and Extension was then commissioned to conduct a three-year scientific study, which included monitoring and performance testing of lagoon systems all over the State of Kansas.

Key findings which resulted from the K-State study included the following:

1. Lagoon systems in Kansas of various types were found to be fairly consistent in terms of their seepage rates – referring to the seepage of lagoon contents through the bottom of the lagoon system. The good news was that lagoons generally performed well with most seepage rates being small. The bad news was that all lagoon systems do leak, and that seepage rates while small were not negligible.
2. Even with low seepage rates, high concentrations of nutrients in effluent flowing into lagoon systems can cause a significant movement of nitrogen and other components into the underlying soils. Some nutrients (such as ammonium) typically remain within a relatively shallow zone near the bottom of the lagoon, while others (such as chloride) will penetrate to greater depths and readily move into shallow groundwater.
3. The risk a lagoon system may pose to underlying groundwater is very site-specific and dependent upon a number of factors, such as: a lagoon's actual seepage rate; the concentration of the waste; the types of soils and their properties beneath the lagoon; the depth from the bottom of the lagoon to groundwater; and the length of time of use (or expected life) of the lagoon.
4. One of the greatest risks lagoon systems pose for groundwater contamination occurs after the end of its useful life and after it is closed or abandoned.

In addition to pointing to aspects of lagoon systems which were not currently being addressed by regulations, this study also illustrated that a one-size-fits-all approach to lagoon system regulation was inappropriate -- that lagoon types and the conditions present at their prospective locations were significant factors in terms of what is necessary (or what is not necessary) in order to protect the environment. In this regard, the K-State researchers concluded:

“For regulatory purposes, site specific design specifications are desirable rather than a uniform maximum seepage rate applied statewide.”

In June of 2000 the City of Newton hosted an Environmental Forum following the release of the results of the K-State study. At that forum then KDHE Secretary Clyde Graeber announced that KDHE was proceeding immediately with the development of science-based, site-specific regulations for lagoon systems. However, for whatever reason those regulations were not then forthcoming.

We commend current KDHE Secretary Bremby and the KDHE staff for resurrecting this initiative.

The City of Newton strongly supports the concept of developing environmental regulations and standards on a science-based, site-specific basis. In the area of water quality, we have a large disparity just within the borders of our State as to geographic, geologic and other environmental conditions and as to the particular public health and safety needs.

If the science exists to support the implementation of site-specific regulations of any type, there is simply no reason not to so proceed. The issue of water quality is too complex and is too important to be governed by inefficient and often unfair standards which are uniform only for the sake or convenience of uniformity.

We had the opportunity to attend a prior public session conducted by KDHE in which an outline of the proposed regulations was reviewed. We support the concepts and objectives contained in the proposed regulations and believe that this represents a reasonable approach to tailor the regulations, particularly as they would be applicable to sensitive groundwater areas such as the Equus Beds.

In particular, I offer the following comments as to the proposed regulations:

- The requirement of a minimum of a 10-foot separation between the bottom of a lagoon and the top of any underlying groundwater is not an overly stringent requirement, and any lagoon which is that close to the groundwater will present a significant risk to the groundwater.
- The enhanced lagoon construction standards for sensitive groundwater areas, and the further enhancement of those standards for lagoon systems constructed over the Equus Beds, is abundantly justified based upon the critical importance of these groundwater resources to the future public and economic health and vitality of our State and based upon their vulnerability.


- However, those enhanced standards do not appear to be overly protective. They will not eliminate the threat of contamination from lagoon systems. Seepage rates can exceed their estimates. Lagoon liners can fail or have their integrity impaired through casualty or misuse. Overflow events can discharge lagoon contents onto unprotected soils and thereby circumvent protective liners. Thus, unless site-specific factors demonstrate otherwise, it will be important that lagoon systems in close proximity to groundwater areas be required to include monitoring wells so that any pollution to the groundwater which may occur can be promptly detected and so that remedial measures can be quickly implemented.
- The need for closure plans and the close supervision of lagoon closures is critical.
 - As noted in the K-State study, the greatest danger a lagoon system poses to the groundwater is after it is no longer being actively used.
 - I do not see that the proposed regulations include a bonding requirement to guarantee at the time of the original permitting of a lagoon system that the funds will be present at the end to carry out a proper lagoon closure, and the same may well be cost-prohibitive. However, we feel it will be important to develop some other means to guarantee that closures will be carried out. One possible option in this regard would be the development of a closure trust fund similar to what has been used for funding the removal of underground storage tanks.
- We support the inclusion in the proposed regulations of the availability of a variance from specific regulatory requirements. While the burden would be rightly on the applicant to make the appropriate showings, it is consistent with the intent for requirements to be tailored to specific site conditions that an applicant have the ability to demonstrate that local conditions do not present the danger which a particular requirement is intended to address, or to demonstrate that new technologies will provide the protections needed.
- We urge the need for continued monitoring and research regarding the performance and adequacy of synthetic liners, and the continued consideration of further modifications to these regulations based upon experience and upon advancements in technology.

Finally, the regulations which are developed for municipal, commercial and industrial lagoons should then serve as the model on which regulations next need to be developed for agricultural lagoons.

While we were dismayed several years ago when it appeared the initial efforts by KDHE to develop these regulations had been stalled, once these efforts were resurrected we have been pleased to see, and we commend KDHE, for the careful process through which it has gone about the development of the current proposed administrative regulations. Extensive efforts have been made to solicit public input and input from municipalities, industry and other potentially affected parties regarding the content of these regulations.

The City of Newton was pleased to be asked to host one of those regional forums at which KDHE staff reviewed the draft regulations as then in development and solicited feedback. I am aware that KDHE has given serious consideration to suggestions and criticisms regarding those draft regulations and made changes based upon that feedback. I think it is extraordinary that KDHE administration and staff have undertaken to the extent they have these kinds of efforts to obtain input into the development of these regulations.

Thank you very much for the opportunity to address you in these critically important efforts.


Robert D. Myers, City Attorney
City of Newton, Kansas

TRANSCRIPT OF PUBLIC HEARING
Municipal, Commercial, and Industrial Lagoon Regulations
August 25, 2004
Dodge City Community College Auditorium - Little Theater

Hearing Officer: Douglas Dubek

Douglas Dubek: Good evening. For the record the time is 7:00 PM on August 25, 2004, at the Dodge City Community College - Little Theater in Dodge City, Kansas. The purpose of this evenings hearing is to consider proposed new administrative regulations addressing municipal, commercial, and industrial wastewater lagoon requirements.

I am Doug Dubek, an Environmental Geologist with the Kansas Department of Health and Environment. I am this evenings hearing officer. I have been appointed by KDHE Secretary Roderick Bremby to represent him at and conduct this evenings hearing. I would like to welcome all of you to this hearing. I will briefly outline the procedures for this hearing. I will then open the hearing to receive comments, input, recommendations, and information from those of you who wish to either provide oral comments and/or present written information. The purpose of this hearing is for KDHE to receive comments, input, recommendations, and information from the regulated community, interested parties, and the public regarding the administrative regulations being proposed. This evenings hearing is not intended to be a forum for debate but rather to allow you to provide KDHE with your comments, recommendations and information that you would like to bring to our attention and consideration regarding the proposed regulations.

As you entered, you should have registered at the table near the entrance. You should have completed a brief form to register your attendance and to also indicate whether you wish to present either oral or written testimony at this hearing. I will use these forms to call people forward to present their testimony and any documents you desire to provide for our review and consideration. If you have not already filled out a form and wish to provide either oral or written testimony during this hearing, I request that you to fill out a form at this time. These forms will also be used by KDHE to advise interested parties as to the Secretary's decision in regard to the proposed regulations. If you did not provide a complete or accurate mailing address, you may not receive notice of the Secretary's decision. If you did not provide complete information when filling out the form, you may complete or correct your form at this time or at the conclusion of the hearing. Please see me or Don Carlson at the end to do so. By the way Don here is with KDHE in our Topeka office he's going to run the show.

This hearing is being tape recorded. The tape will be transcribed and become a part of the record which Secretary Bremby will consider in making his decision regarding the proposed regulations being addressed at this hearing. As the proceedings are being taped, all testimony and comments, must be made at the microphone located here at the front.

I request that individuals making presentations at the microphone not be interrupted while they are presenting testimony. Only testimony presented at the microphone will be considered a part of the official hearing record. I will call to the microphone those individuals that have indicated on the registration forms they wish to either make an oral presentation or submit written comments. If we have time, I will then allow individuals who did not indicate on the registration form they wanted to make an oral presentation the opportunity to speak.

When you step up to the microphone, please identify yourself by providing your name and where you live. This will help us in developing the transcript.

Are there any questions? If not, we shall begin.

At this time I will open the proceedings and begin taking testimony by calling those individuals to the microphone that have been identified from the registration forms as wishing to either make an oral presentation or to present written information this evening. The first individual will be Jim Carlson. Jim.

Jim Carlson:

Good evening. My name is James Carlson. I'm with Sunflower Electric Power Corporation. I can tell by the size of the crowd that everybody knew I was going to come up to speak. Everyone list to hear an engineer speak it can be a real face slammer. My name is James Carlson and I am Supervisor of Environment at Sunflower Electric Power Corporation. I'd like to begin by thanking the Kansas Department of Health and Environment, Don Carlson, and Doug Dubek for your efforts for striking a balance between the concerns of Environmental Groups, the needs of Kansas businesses, its meeting of the statutory requirements of the legislature, and protection of the environment for Kansans. At Sunflower, we value the good working relationship we have enjoyed with KDHE over the years, and appreciate the mutual respect we have developed by working together on a number of environmental issues.

We have reviewed the proposed Regulations KAR 28-16-160 through 28-16-174, inclusive, and are providing comments from the technical and application standpoints. For purposes of tonight's public meeting, we will limit our comments to a technical overview of how the regulations, if promulgated, would impact the present and future operations at our Holcomb facility.

In summary, the proposed Wastewater Impoundment Regulations establish three classes of industrial lagoons based on the industrial process, classification of wastewater or concentration of pollutants identified as having “pollution potential”. All three classes of lagoons will require lining of some type, ranging in complexity from single, compacted-soil liners for some waste streams to complex, double synthetically-lined systems employing leachate collection, redundant cells, and engineered dewatering systems for waste streams with high pollution potential. No provisions have been included in the regulatory framework to exclude classes of impoundments with non-lined systems and innocuous waste streams, examples which include stormwater retention ponds, temperature buffering ponds, and coal-pile runoff basins.

From the technical standpoint, these regulations mandate minimum liner thicknesses, compaction specifications, moisture parameters of soils, liner anchoring, minimum slope information, and other engineering details which typically are the discretion of the professional engineer overseeing the project. Similarly, the professional engineer is required to provide construction plans and specifications, a post-construction hydraulic-testing plan, a field hydrogeologic study of the site, certifications from the liner manufacturer as to material compatibility and resistance of liner to UV light breakdown, and a Quality Assurance/Quality Control Plan for both destructive and non-destructive seam-testing. Also required is a release contingency plan, a facility closure plan, and identification of oil, gas and water wells within 600 feet of an impoundment site, with the specter that construction activities could be terminated by KDHE if the potential to impact a well exists.

In mandating detailed technical criteria to be implemented by the professional engineer, the Agency has replaced the professional engineer’s obligation with a mandated regulatory structure. We believe that when the site specific details are left to the professional engineer, who is certified by the State, a more effective and efficient installation is the result. Similarly, because of the number and complexity of the documents the agency is requiring to be certified by the PE, we propose the Agency consider building into the regulations the appropriate review time at the end of which a response from the Agency would be required. This would afford the regulated community surety during the construction permitting process, thus allowing sufficient time for project planning.

With respect to the grandfathering of existing impoundments, under the proposed regulations, industries in Kansas will be allowed to continue operation of existing impoundments unless such facilities are drained and KDHE orders upgrades due to non-compliance with statutory, regulatory, permit or the general category of “protection of public health and the environment.” Using the example of our Holcomb facility, our water pollution control permit is renewed every 5 years, and

the most recent renewal contained additional operating and compliance provisions. The concern here is that additional requirements could be folded into permits during renewal that, over 1-2 permit cycles, could evolve to a non-compliance condition of an otherwise sound facility, placing the impoundment in jeopardy of mandated upgrades. Similarly, because a grandfather clause typically allows existing facilities to continue operations, these regulations, as proposed, appear retroactive in that facilities which may historically have impacted the environment but which are now being operated in a sound manner may be captured in a non-compliance scenario. We also believe that existing facilities should be allowed to continue operation under the historical permit conditions until their useful life is exhausted, and absent an application to KDHE for reconstruction, expansion or a current release to the environment, they should be allowed, by regulation, to continue to be operated.

As stated, these regulations establish three classes of industrial lagoons based on the industrial process, classification of wastewaters or concentration of pollutants. Using the proposed wastewater classifications, our Holcomb facility would fall under the double-liner standard when we undertake to reline our surface impoundments, a project scheduled to be undertaken within the next few years. By contrast, we have not observed impacts to groundwater beneath our impoundments which indicates that our 20 year old, single-lined units, in conjunction with our comprehensive maintenance program, have proven sufficiently protective of human health and the environment. It is against this backdrop of confirmed data that we question the appropriateness of the proposed classification & concentration criteria as the sole mechanism for deciding the level of containment technology, single-lined, double-lined or whatever for existing facilities.

With respect to the variance provision found in the proposed wastewater regulations, we believe that KDHE should consider including a process of establishing how a variance may be considered, prepared, reviewed, and granted, including general criteria, so that the process can be consistently and objectively applied over time.

We suggest that KDHE consider including in the variance provision opportunities to evaluate the toxicity of wastewaters, site parameters and other risk or site-based parameters which may be reasonably applied in specific situations that are consistent with good industrial and environmental design practice.

In conclusion, Sunflower Electric Power Corporation joins KDHE in desiring a well designed and meaningful regulatory program for industrial wastewater basins. We commend you for your efforts. We do thank you for your investment of time and resources to visit with those of us in Western Kansas and we trust you will

give due consideration to conditions that exist in this part of the State.

Thank you for your attention.

Douglas Dubek:

Are there any other individuals that would like present oral or written testimony? If not, that concludes the testimony portion of the hearing.

The process that now takes place is for staff to transcribe the tape, review the testimony and any other information received this evening, review information submitted during the public notice period and from other hearings, identify the various issues, concerns, and recommendations raised, and prepare a responsiveness summary addressing technical, statutory, regulatory, or environmental issues along with staff's recommendations. The responsiveness summary will then be directed to Secretary Bremby for review and consideration. The Secretary will then render a decision regarding changes to the proposed regulations. Those individuals participating at this hearing and who have previously submitted comments to KDHE for consideration will be notified of the Secretary's decision. Again, I would like to remind you that if you desire to be notified of the Secretary's decision, we need to have you fill out a registration form following the conclusion of this hearing. The deadline for submitting written comments regarding the proposed regulations is the close of business on September 10, 2004.

Secretary Bremby and I wish to thank you for coming to the hearing and providing your input.

This hearing is closed.

HEARING ATTENDANCE

Jim Carlson Sunflower Electric P.O. Box 1649 Garden City, KS 67846 Oral and Written Comments.	H. Jan Seoggins-Waite House District 119 P.O. Box 473 Dodge City, KS
Devee Scacat Aquila P.O. Box 1180 Dodge City, KS 67801	Steve Waite Dodge City Community College 3501 N. 14th Ave Dodge City, KS 67801
Tom Ford Aquila P.O. Box 170 Great Bend, KS 67530	Mike Newport Aquila P.O. Box 2499 Liberal, KS 67901
Audrey Martin KBSD Channel 6 100 Airport Rd. Dodge City, KS 67801	Steve Riner Aquila 105 S. Victoria Pueblo, CO 81003

Oral Comments
of
Sunflower Electric Power Corporation
on
The Proposed Municipal, Commercial
and
Industrial Wastewater Impoundment Regulations

Delivered August 25, 2004
at
Dodge City Community College Auditorium,
Dodge City, Kansas

My name is James Carlson and I am the Supervisor of Environment at Sunflower Electric Power Corporation. I would like to begin by thanking the Kansas Department of Health and Environment for its efforts at striking a balance between the concerns of Environmental Groups, the needs of Kansas businesses, its meeting of the statutory requirements of the legislature, and protection of the environment for Kansans. At Sunflower, we value the good working relationship we have enjoyed with KDHE over the years, and appreciate the mutual respect we have developed by working together on a number of environmental issues.

We have reviewed proposed Regulations KAR 28-16-160 through 28-16-174, inclusive, and are providing comments from the technical and application standpoints. For purposes of tonight's public meeting, we will limit our comments to a technical overview of how the Regulations, if promulgated, would impact the present and future operations at our Holcomb facility.

In summary, the proposed Wastewater Impoundment Regulations establish three classes of industrial lagoons based on the industrial process, classification of wastewater(s) or concentration of pollutants identified as having "pollution potential." All three classes of lagoons will require lining of some type, ranging in complexity from single, compacted-soil liners for some waste streams to complex, double synthetically-lined systems employing leachate collection, redundant cells, and engineered dewatering systems for waste streams with higher pollution potential. No provisions have been included in the Regulatory framework to exclude classes of impoundments with non-lined systems and innocuous waste streams – Examples which include stormwater retention ponds, temperature buffering ponds, and coal-pile runoff basins.

From the technical standpoint, these Regulations mandate minimum liner thicknesses, compaction specifications, moisture parameters of soils, liner anchoring, minimum slope information, and other engineering details which typically are the discretion of the Professional Engineer overseeing the project. Similarly, the Professional Engineer is required to provide construction plans and specifications, a post-construction hydraulic-testing plan, a field hydrogeologic study of the site, certifications from the liner manufacturer as to material compatibility and resistance of liner to UV light breakdown, and a Quality Assurance/Quality Control Plan for both destructive and non-destructive seam-testing. Also required is a release contingency plan, a facility closure plan, and identification of oil, gas and water wells within 600 feet of an impoundment site – with the specter that construction activities could be terminated by KDHE if the potential to impact a well exists.

In mandating detailed technical criteria to be implemented by the Professional Engineer, the Agency has replaced the Professional Engineers' obligation with a mandated regulatory structure. We believe that when the site specific details are left to the Professional Engineer, who is certified by the State, a more effective and efficient installation is the result. Similarly, because of the number and complexity of the documents the agency is requiring to be certified by the PE, we propose the agency consider building into the Regulations the appropriate review time(s) at the end of which a response from the Agency would be required. This would afford the Regulated community surety during the construction permitting process, thus allowing sufficient time for project planning.

With respect to the grandfathering of existing impoundments, under the proposed Regulations, industries in Kansas will be allowed to continue operation of existing impoundments *unless* such facilities are drained and KDHE orders upgrades due to non-compliance with Statutory, Regulatory, Permit or the general category of 'protection of public health and the environment.' Using the example of our Holcomb facility, our Water Pollution Control Permit is renewed every 5 years – and the most recent

renewal contained additional operating and compliance provisions. The concern here is that additional requirements could be folded into permits during renewal that, over 1 - 2 permit cycles, could evolve to a non-compliance condition of an otherwise sound facility – placing the impoundment in jeopardy of mandated upgrades. Similarly, because a grandfather clause typically allows *existing* facilities to continue operations, these Regulations, as proposed, appear retroactive in that facilities which may historically have impacted the environment but which now are being operated in a sound manner may be captured in a non-compliance scenario. We also believe that existing facilities should be allowed to continue operation under the historical permit conditions until their useful life is exhausted, and absent an application to KDHE for reconstruction, expansion or a current release to the environment, they should be allowed, by regulation, to continue to be operated.

As stated, these Regulations establish three classes of industrial lagoons based on the industrial process, classification of wastewater(s) or concentration of pollutants. Using the proposed wastewater classifications, our Holcomb facility would fall under the double-lining standard when we undertake to reline our surface impoundments – a project scheduled to be undertaken within the next few years. By contrast, we have not observed impacts to groundwater beneath our impoundments which indicates that our 20-year-old, single-lined units, in conjunction with our comprehensive maintenance program, have *proven* sufficiently protective of human health and the environment. It is against this backdrop of confirmed data that we question the appropriateness of the proposed classification & concentration criteria as the sole mechanism for deciding the level of containment technology – single-lined, double-lined or whatever for existing facilities.

With respect to the variance provision found in the proposed wastewater Regulations, we believe that KDHE should consider including a *process* of establishing how a variance may be considered, prepared, reviewed, and granted - including general criteria, so that the process can be consistently and objectively applied over time.

We suggest that KDHE consider including in the variance provision opportunities to evaluate the toxicity of wastewaters, site parameters and other risk or site-based parameters which may be reasonably applied in specific situations that are consistent with good industrial and environmental design practice.

In conclusion, Sunflower Electric Power Corporation joins KDHE in desiring a well designed and meaningful regulatory program for industrial waster water basins. We commend you for your efforts. We do thank you for your investment of time and resources to visit with those of us in Western Kansas and we trust you will give due consideration to conditions that exist in this part of the state.

Thank you for you attention.

TRANSCRIPT OF PUBLIC HEARING
Municipal, Commercial, and Industrial Lagoon Regulations
August 26, 2004
Sedgwick County Extension Education Center - Wichita, Kansas

Hearing Officer: John Goetz

John Goetz: Good evening. For the record the time is 7:00 PM on August 26, 2004, at the Sedgwick County Extension Education Center, Wichita, Kansas. The purpose of this evenings hearing is to consider proposed new administrative regulations addressing municipal, commercial, and industrial wastewater lagoon requirements.

I am John Goetz and I am an Environmental Engineer in the Kansas Department of Health and Environment's Wichita District Office. I am this evenings hearing officer. I have been appointed by Secretary Roderick Bremby to represent him at and conduct this evenings hearing. I would like to welcome all of you to this hearing. I will briefly outline the procedures for this hearing. I will then open the hearing to receive comments, input, recommendations, and information from those of you who wish to either provide oral comments and/or present written information at this hearing. The purpose of this hearing is for KDHE to receive comments, input, recommendations, and information from the regulated community, interested parties, and the public regarding the administrative regulations being proposed. This evenings hearing is not intended to be a forum for debate but rather to allow you to provide KDHE with your comments, recommendations and information that you would like to bring to our attention and consider regarding the proposed regulations.

As you entered, you should have registered at the table near the entrance. You should have completed a brief form to register your attendance and to also indicate whether you wish to present either oral or written testimony at this hearing. I will use these forms to call people forward to present their testimony and any documents you desire to provide for our review and consideration. If you have not already filled out a form and wish to provide either oral or written testimony during this hearing, I request that you to fill out a form at this time. These forms will also be used by KDHE to advise interested parties as to the Secretary's decision in regard to the proposed regulations. If you did not provide a complete or accurate mailing address, you may not receive notice of the Secretary's decision. If you did not provide complete information when filling out the form, you may complete or correct your form at the conclusion of the hearing. Please see me or the KDHE staff following the hearing. At this point I would like to introduce Don Carlson over at the table over there. Don is the Chief of the Industrial Program Section in the Bureau of Water in our Topeka office and that is our sole KDHE staff other than me at the hearing.

This hearing is being tape recorded. The tape will be transcribed and become a part of the record which Secretary Bremby will consider in making his decision regarding the proposed regulations being addressed at this hearing. As the proceedings are being taped, all testimony and comments, must be made at the microphone to my left.

I request that individuals making presentations at the microphone not be interrupted while they are presenting testimony. Only testimony presented at the microphone will be considered a part of the official hearing record. I will call to the microphone those individuals that have indicated on the registration forms they wish to either make an oral presentation or submit written comments. At this time I will not set any time limit on your presentations however if the evening wears on, at some point in time, I leave myself the discretion of doing that. If we have time, I will then allow individuals who did not indicate on the registration form they wanted to make an oral presentation the opportunity to speak.

When you step up to the microphone, please identify yourself by providing your name and where you live. This will help us in developing with the transcript.

If there are no questions regarding how the hearing will be conducted, we will begin. Is there any questions at this point?

Unknown: An unidentified person in the audience asked a question the microphone did not pick up.

John Goetz: No.
The question was, do we have an overhead projector and the answer is no. I'll record that into the record.

At this time I will open the proceedings and begin taking testimony by calling those individuals to the microphone that have been identified from the registration forms as wishing to either make an oral presentation or to present written information this evening. The first individual I'm going to call is Mike Dealy.

Mike Dealy: My name is Michael T. Deal. I'm the Manager of the Equus Beds Groundwater Management District based in Halstead. Our address is 313 Spruce Street in Halstead, Kansas. And I'm here to present testimony to the Kansas Department of Health and Environment concerning the proposed Municipal, Commercial, and Industrial Wastewater Lagoon Regulations.

The Equus Beds aquifer is the principal source of fresh and usable water in South Central Kansas. The aquifer underlies portions of a four-county area the size of the State of Rhode Island.

There are 1,620 non-domestic water wells that withdraw an average of 50 billion gallons from the aquifer each year.

Over 500,000 people, or 20% of the State's population, in Harvey, Sedgwick, McPherson and Reno counties rely on the aquifer for drinking water and other daily needs.

Almost 100,000 acres are irrigated using groundwater from the Equus Beds Aquifer. Total livestock and crop production was over \$300 million in 1991.

The Equus Beds Aquifer is the lifeblood for the area's businesses and industries. The total annual payroll for industry and commerce in the four county area was over five billion dollars based on a 1990 economic report.

Depth to the top of the Equus Beds Aquifer ranges less than 10 feet to 110 feet below land surface. Depth to water in the northern portion of the District is greater and ranges from 40 feet to 110 feet; in the southern portion it ranges from less than 10 to 40 feet.

Distinctive soil, climate, geological and hydrologic conditions in the Equus Beds region are unique and increase the aquifer's sensitivity to normal man-made activities and substantially increase the contamination risk to the Equus Beds Aquifer. Unless enhanced water protection measures are taken in these sensitive groundwater areas, the aquifer is at-risk to contamination from municipal, commercial, and industrial wastewater lagoons.

Kansas Department of Health and Environment's present lagoon guidelines allow infiltration rates of 1/8-inch and 1/4-inch equating to 45 inches and 90 inches per year respectively. While such guidelines and construction requirements are adequate for a majority of the State, they are grossly inadequate for the Equus Beds Aquifer and placing it at great risk for contamination by a lagoon.

For example, a one acre wastewater lagoon 210 feet by 210 feet, with an infiltration rate of 1/8-inch per day has the potential to infiltrate or seep 1.2 million gallons of wastewater per year through the bottom and side of the lagoon into the underlying Equus Beds Aquifer.

Historical data demonstrates that fluid in such disposal lagoons will infiltrate shallow groundwater and contaminate it.

One need only look to the Burrton and Hollow Nikkel Oil Fields for a case study in the use of such lagoons and the resulting groundwater contamination.

From 1930 to 1960, lagoons were permitted by State regulations and used by industry to dispose of saltwater from oil production.

A large percentage of an estimated 1.9 million tons of salt infiltrated, as brine, through the bottom and sides of the lagoons and contaminated a 70-square mile area of the Equus Beds Aquifer.

Thirty years after the last brine disposal lagoon was decommissioned and closed, saltwater contamination continues to pollute water wells in the area, costing public and private water well owners tens of thousands of dollars.

Two groundwater management areas have been established to manage and remediate the groundwater pollution from hundreds of these lagoons. The cost to manage and remediate the contaminated areas has largely been endured by the state-taxpayers and has cost hundreds of thousands of dollars to date.

Adopting a pro-active stance in 1986, the Kansas Corporation Commission, with support from the oil and gas industry and the Groundwater Management District, adopted lagoon regulations that protect fresh and usable waters from contamination associated with surface ponds used during oil and gas production.

The District has reviewed the wastewater lagoon regulations K.A.R. 28-16-160 through K.A.R. 28-16-174 proposed by the Kansas Department of Health and Environment.

The District finds the proposed regulations afford the following groundwater protection measures:

- enhanced water protection requirements for the Equus Beds Aquifer region;
- minimum separation distance of 10 feet from the lagoon bottom to groundwater level;
- single membrane lagoon liner requirements in the Equus Beds region for municipal, commercial and industrial domestic wastewater lagoons;
- dual membrane lagoon liner requirements in the Equus Beds region for industrial lagoons treating process wastewater;
- minimum infiltration rate of 1/64-inch per day for lagoons in the Equus Beds region;

- postconstruction testing of lagoon liners;
- Department authority to require the use of groundwater monitoring wells;
- a lagoon closure plan addressing procedures to deactivate the treatment lagoon and associated equipment and properly dispose of wastewater, sludge, synthetic liners and any contaminated soil and groundwater; and
- Department authority to grant a variance if the request meets the intent of the regulations and provides for the protection of public health and the environment.

Based on the review findings, the Board of Directors of the Equus Beds Groundwater Management District, at the August 10, 2004, meeting voted to support the adoption of the proposed municipal, commercial and industrial wastewater lagoon regulations.

Secretary Bremby and Kansas Department of Health and Environment staff is to be commended for presenting the proposed regulations, which will provide the needed protection for the fresh and usable waters of the Equus Beds Aquifer.

Thank you.

John Goetz: OK, the next person that I wish to call is Carol Bloodworth with the City of Maize. Carol, you indicated that you were going to submit written comments.

Carol Bloodworth: Carol Bloodworth, the City of Maize, the City Administrator. I understand that the comment period has been extended an additional two weeks so that there is time after this hearing has been digested to submit comments concerning, that's what I plan to do.

John Goetz: I was going to mention that at the end of the hearing that we will continue to receive written comments to September 10th of this year so there will be plenty of additional time to submit written documents to us if you wish. At this time you do not make any oral presentation? OK.

The next person I'm going to call is John Waltner.

John Waltner: Good evening. My name is John Waltner. I am the Mayor of the City of Hesston. I live in the City of Hesston at 201 South Main. I currently serve as the Chair of the Legislative Committee of the Regional Economic Area Partnership, or REAP.

REAP is a council of local governments in South Central Kansas. The thirty-one

city and county governments in REAP have voluntarily joined together for two primary reasons: first, to guide state and national actions that affect economic development in the region; and second, to adopt joint efforts among member governments that enhance the regional economy.

One of the most significant regional priorities for REAP is the protection of the public water supply in South Central Kansas. The Equus Beds Aquifer is a primary source of water for many REAP communities. This aquifer is clearly critical to the economy of South Central Kansas and to the quality of life of its residents.

On February 10, 2003, the local governments in REAP adopted a resolution supporting greater protection of the Equus Beds Aquifer. A copy of this resolution is attached to the hard copy of my comments.

The members of REAP believe that the protection of the aquifer must be enhanced by the adoption and enforcement of site specific regulations. The geography and geology of the Equus Beds is unique to other aquifers in the State and it appears obvious that a one-size-fits-all approach to water protection is simply not good public policy for the State of Kansas.

The regulations being proposed recognize the sensitive and fragile nature of the Equus Beds. REAP is supportive of the elements in the proposed regulations, particularly those that require:

- Additional synthetic liners for all waste water lagoons in the Equus Beds Aquifer.
- Increased monitoring for wastewater treatment lagoons.
- Closure plans for wastewater lagoons.
- Minimum separation of 10 feet from a wastewater lagoon's liner to groundwater.

Members of REAP have had the opportunity to meet with Secretary Bremby and the KDHE staff. We are pleased with the commitment that is now being brought to this issue of groundwater protection. On behalf of REAP I would like to thank Secretary Bremby and KDHE for making this issue a high priority.

John Goetz: The next person I wish to call is Bessie Black.

Bessie Black: Good evening. I'm Bessie Black. I live at 10750 North 135th Street West, RR

#2 Sedgwick, Kansas. But I live one mile from Bentley right in the middle of the Equus Beds. As good as these regulations are, if this is the regulations, they are not good enough. There is not one word in there about septic tanks. Septic tanks pollute forever. They are transferred from homeowner to homeowner to homeowner. It never goes back to farmland. Its polluted forever. Not one word in here. Oh I have to tell you I have a drinking problem. My husband and I both have a drinking problem. You probably have heard me speak before. Yes we have drinking problems and you do to. The Equus Beds is polluted. Bad news. But I also have good news. Tonight I want to introduce my husband he has Parkinson's. I believe we have polluted water and I believe that is what caused his Parkinson's. The reason I say that, Bentley is 450 people, we have 7 with Parkinson's, 10 with cancer, and 3 with muscular degressive that is where the muscles sag. That's neurological that is very concerned, I am very concerned about this water and you should be to. OK, in 2002, the Equus Beds was proven polluted 60 feet down. This is 2004. Not one thing has been done to protect that water. What do you think that it is now? It's very polluted. People when your water smells, Wichita's did, it tasted terrible. Of course they bought new equipment, but it is polluted bad. Now if I'm standing up here and if I can prevent some young kid from getting brain cancer or some family Parkinson's, then I'm going to be up here fighting for to prevent water pollution. The Equus Beds in this area is very large field. Not every state is blessed with an Equus Beds. This is our future. How are we going to sell our state to new industry when our water is all polluted? Have you thought about that? Whose going to come to a state with water pollution? Something to think about. I asked a young child the other day, I said do you know what we need to do to prevent water pollution? That child didn't have a clue. We need to be teaching our young people in our schools how to protect our precious resource. That is very important, they are our future. That's another point I want to make. I would like for it to be mandatory in science 1 thru 8 grades, its that important. I understand there was a bill in our Legislature in Topeka to prevent our Equus Beds water pollution. It was voted down. I can't believe it. Any legislator that does not want to protect our drinking water needs to be voted out of office. Thank you.

Oh, can I speak more? I did my homework. I saved my Eagle Beacon. This is an article on "Dead Trees Cloud Water Goals". Those are dead trees by a Wichita water well. Its probably herbicide. And which brings me to another point. I visited one of our agricultural centers. I got a book on pesticides and herbicides. And folks, these are the most poisonous things you can believe that is being put out on our soil. I worked for Culligan at one point. I learned one thing, any thing we put on our soil goes into the water. Once irrigation or rainfall hits it, it goes right into the water. These are poisonous, one teaspoon will kill you. It says right in this book, and one of these has a paragraph on it says you might have neurological problems. Which brings you to think of Parkinson's or

Alzheimer's. Now Bill goes to the KU Medical Center in Kansas City. We have three doctors doing research on this right now. They believe these herbicides are playing havoc with our brain cells. If they can engineer a herbicide that goes directly to the roots of a plant to kill it instantly, and we get this in our water system, what do you think it is doing to our connector? Course we get it in a diluted form. But it is very serious what is going into our water. That is why we need legislation in Topeka soon. The sooner the better. I thank you.

John Goetz: The next person I'm going to call is Charles Benjamin.

Charles Benjamin: Thank you. These comments are presented on behalf of the Kansas Chapter of the Sierra Club. I'm Charles Benjamin. I'm an attorney based in Lawrence and the Sierra Club is one of my clients. Except for the three reservations listed immediately below, the proposed rules appears to be reasonable and adequately calibrated to the potential risks posed by the subject wastewaters when lagoons are installed over the Equus Beds or over sensitive groundwaters of the State. The three concerns we have are as follows:

1. The rules do not list certain key quality control standards commonly employed during and after lagoon construction such as degree of compaction, number and thickness of lifts, clearance of objects that can damage liners and measures to protect liners from damage after completion. Instead the Department simply looks at the resultant seepage rate achieved during a single post construction seepage test. The inclusions of such standards would provide greater assurance that seepage will remain within the desired rate limit over the life of the facility.
2. The closure and proper remediation of lagoons that have been abandoned is crucial to the long run protection of groundwater. The Department needs to specify the procedures they will employ to consider the closure plan and needs to make a general statement about what soil and groundwater contamination standards they will apply. We commend the Department for specifically stating that the owner will be responsible for cleaning up contaminated soil and groundwater beneath the lagoon. This will give owners incentive to consider both the short term and long run costs associated with the quality of construction of their facility.
3. The definition of a municipal wastewater treatment system would appear to allow systems run by municipalities that receive significant inputs from industry, such as the Dodge City, Kansas plant, to use a much weaker standard for lagoon construction even though the strength and toxicity of the wastewater may be much greater than that of a system treating entirely domestic sewage. This loop hole will encourage certain industries like

packing and rendering plants to divert their wastewater to municipal systems even though they will have to pay a user fee.

The main problem with the rules, and it's a very big one, is that there is little justification for allowing municipal lagoons and lower risk commercial/industrial lagoons installed in areas other than the Equus Beds and over sensitive groundwater to be built to a weaker standard.

The Kansas State University lagoon study did prove that lagoon seepage rates are usually much less than the current limit of 1/4-inch per day. However the study did not prove, nor was it designed to prove, that lagoons do not pollute deeper groundwater. Nor did the study prove that the 1/4-inch seepage standard, which has no scientific basis, actually prevents the pollution of groundwater. That's because the K-State researchers did not actually test for contamination under lagoons installed over deeper groundwaters outside the Equus Beds area.

The bifurcation of lagoon rules on the basis of geographic location is apparently based on the erroneous notion put forth by K-State researchers that groundwaters at a depth of 100 feet to 130 feet or greater, often found in Western Kansas, are somehow immune from contamination. This notion was entirely based on certain studies from the literature cited by K-State researchers. These studies were shown to be invalid or inapplicable to the High Plains Aquifer by Craig Volland in reports issued in 1998 and 2000. Relevant excerpts are attached for your convenience.

More recent data from the United States Geological Survey confirms our previous conclusion. For this analysis we have extracted data relating to Kansas. In one study the USGS analyzed 25 randomly selected domestic wells in Southwest Kansas which were qualified by adequate well construction. Our Attachment Graph 1 shows little or no correlation between depth to groundwater and nitrate values. Three of the four highest nitrate values occurred in wells where the water table was in excess of 150 feet deep.

In a second study USGS installed 27 monitoring wells in Western Kansas in proximity to irrigated fields. Since USGS installed these wells, the quality of their construction is presumably assured. The USGS selected only wells with water tables less than 200 feet down. The water table in most, though not all, of Western Kansas is less than 200 feet deep. Our attached Graph 2 shows, again, little or no correlation between depth to groundwater and nitrate values. In fact, of the 10 values that exceeded the 10 ppm contaminant level, which is the health standard, 6 were in water tables over 130 feet.

It is true that the risk associated with lagoons that treat entirely domestic sewage

or low risk industrial wastewaters would be much less than that associated with livestock lagoons which are not considered in these rules. However, there is little justification for assuming this risk is insignificant, especially since the proposed rules appear to allow industrial dischargers to skirt the stricter industrial lagoon construction requirement by discharging all or part of their industrial process waste to the public sewer system. One need only look at the Dodge City plant for an example of combined systems that have polluted groundwater.

The KDHE is to be commended for attempting to strengthen protection of the State's groundwater. However, these proposed rules fail to achieve an adequate level of protection in large parts of the State served by the High Plains Aquifer. We respectfully request that the KDHE correct the stated shortcoming and extend protection to groundwater relied upon by all citizens in the State of Kansas. Thanks for the opportunity to make these comments.

John Goetz:

The next person I'll call is Kay Johnson. You indicated you were going to submit written comments but no oral comments. Is that ...

Kay Johnson:

Good evening. My name is Kay Johnson and I am the Director of Environmental Health for the City of Wichita. The City of Wichita has reviewed regulations proposed by the Kansas Department of Health and Environment regarding Municipal, Commercial, and Industrial Lagoon Requirements. The City appreciates the opportunity to provide comments on the proposed regulations as follows. We have a general comment and then 2 or 3 specific comments.

Over the years, the City of Wichita has expressed concern and provided specific information to KDHE regarding the importance of the protection of the Equus Beds Aquifer. This natural resources is classified by the State as a sensitive groundwater area due to distinctive soil, climate, geologic and hydrologic conditions which substantially increase the potential and vulnerability to contamination. The City of Wichita and other cities have existing water supply wells in the Equus Beds, which make this aquifer a vital water supply for the region. Therefore, the City concurs that this aquifer should have more stringent requirements for its protection than other areas of the State.

The City of Wichita is supportive of KDHE's requirements to:

1. Require additional synthetic liners for all types of wastewater treatment lagoons in the Equus Beds;
2. Require a site-specific upgradient and downgradient groundwater monitoring program for each wastewater treatment lagoon in the Equus Beds Aquifer;

3. Require facility closure plans for wastewater treatment lagoons in the Equus Beds Aquifer; and
4. Require a separation of greater than 10 feet from a wastewater lagoon's bottom liner and the top of groundwater.

Also a specific requirement regarding, we have is regarding the existing wastewater treatment lagoons. The proposed regulations state that existing facilities be exempt from meeting the new regulations as long as they do not pose a threat to public health or the environment. The City of Wichita agrees with this concept provided that all existing lagoons in the region of the Equus Beds have some type or periodic technical evaluation program, including some actual groundwater monitoring, to provide evidence that it is not a threat to human health or the environment.

We also offer another specific comment on historical groundwater elevation data. Groundwater elevations in the Equus Beds can vary substantially with time. For instance, groundwater levels in July and August can be several feet lower than in January, due to the influence of irrigation water usage. Water levels not only vary seasonally, but also over longer periods of time. Groundwater level monitoring by the U.S. Geological Survey has recorded that some areas in the City of Wichita's wellfield had declined as much as 40 feet between 1940 and 1993, and that some of those same areas have risen more than 20 feet since 1993. Therefore it is recommended that historical maximum groundwater levels be used whenever appropriate records are available to assure that there will be a minimum of 10 feet of separation between the bottom of a lagoon and the groundwater. It is recommended that reference to historic water levels be included in the definitions and in discussions of groundwater separation distance, especially in the Equus Beds. Historic data from the USGS, GMDs or other sources may be used to establish historic groundwater elevations.

Proposed regulation 28-16-163 provides that test borings be drilled to a minimum depth of 10 feet, or to bedrock if bedrock is less than 10 feet. Because of the variation in water depths, it is recommended that test borings be drilled a minimum of 15 feet below the proposed lagoon bottom to help ascertain if groundwater separation is available, and to determine if there is a potential threat that the separation distance cannot be maintained.

If these regulations cannot be tailored to consider historic groundwater elevations, then monitoring wells should be used to verify that groundwater separation requirements are maintained as a part of the permit requirements for continued operation of new lagoons. If a new lagoon is constructed, and water levels rises

then the lagoons should be closed if the 10-foot separation requirement is not maintained.

One other specific comment, proposed regulation 28-16-161 and 28-16-162, Item (d)(1), which states that the groundwater separation distance must be greater than 10 feet is not needed, as that requirement is already identified in statement (a), which states that new lagoons will be prohibited if the groundwater separation distance is less than 10 feet.

In summary, the City of Wichita reiterates its continued concern over the protection of the Equus Beds Aquifer and believe that higher standards such as those addressed in the proposed regulations are required in areas that are designated as sensitive groundwater areas. The City of Wichita applauds the idea of increasing statewide groundwater protection standards as well as taking into consideration site-specific information to develop site-specific standards for wastewater treatment lagoons of all types.

Thank you.

John Goetz: The final person that indicated that they were going to submit comments is Jerry Blain.

Jerry Blain: [Can't make out comment as it was away from the microphone.]

John Goetz: I'll just note you are going to submit written comments. OK I have called everyone who indicated on the registration forms that they wished to speak. At this time is there anyone else who did not originally indicate a desire to speak that would like to come forward? OK, seeing none that concludes the testimony portion of this hearing.

The process that now takes place is for staff to transcribe the tape, review the testimony and any other information received this evening, review information submitted during the public notice period and from other hearings, identify the various issues, concerns, and recommendations raised, and prepare a responsiveness summary addressing technical, statutory, regulatory, or environmental issues along with staff's recommendations. The responsiveness summary will then be directed to Secretary Bremby for review and consideration. The Secretary will then render a decision regarding changes to the proposed regulations. Those individuals participating at this hearing and who have previously submitted comments to KDHE for consideration will be notified of the Secretary's decision. Again, I would like to remind all of you that if you desire to be notified of the Secretary's decision, we need to have you fill out a registration form following the conclusion of this hearing. The deadline for submitting written

comments has been extended. Please note that the deadline now for submitting written comments for the proposed regulations is to the close of business on September 10th, 2004. Again I'll repeat that, its September 10th, 2004.

Secretary Bremby and I wish to thank you for coming to the hearing and providing your input.

At this time it is approximately 7:40 PM and I will declare the hearing closed. Thank you.

HEARING ATTENDANCE

<p>Mike Dealy Equus Beds GMD #2 313 Spruce Street Halstead, KS 67056 Oral and Written Comments</p>	<p>Carol Bloodworth City of Maize 123 Knedive P.O. Box 245 Maize, KS</p>
<p>John Waltner REAP & City of Hesston 201 S. Main Hesston, KS 67062 Oral and Written Comments</p>	<p>Bessie Black 10750 N. 135th West, RR2 Sedgwick, KS 67135 Oral Comments.</p>
<p>Charles Benjamin Kansas Chapter of Sierra Club P.O. Box 1642 Lawrence, KS 66044 Oral and Written Comments</p>	<p>D. Kay Johnson City of Wichita 1900 E. 9th Wichita, KS 67214 Oral and Written Comments</p>
<p>Jerry Blain City of Wichita 455 N. Main Wichita, KS 67202</p>	<p>Kathy Hanks Hutchinson News 103 E. 19th Ave. Hutchinson, KS 67502</p>
<p>Craig Harms NCRA P.O. Box 1404 2000 S. Main McPherson, KS 67460</p>	<p>Jim Jones NCRA P.O. Box 1404 McPherson, KS 67460</p>
<p>Willis J. Wilson MKEC 411 N. Web Rd. Wichita, KS 67206</p>	<p>M. S. Mitchell Wichita Area Builders Association 1215 S. Forest Wichita, KS 67203</p>
<p>Debra Baker Kansas Water Office 901 S. Kansas Topeka, KS 66612</p>	<p>Phillip Fishburn Midwest Assistance Program P.O. Box 491 Haven, KS 67543</p>
<p>Bill McKinley City of Maize 123 Knedive Maize, KS</p>	<p>Bryce L. Winter MKEC Engineering 411 N. Webb Rd. Wichita, KS 67206</p>

Michael Ehss Terracon 2111 W. Harry Wichita, KS 67203	Ellie Skokan 5825 Memphis Wichita, KS 67220
Bob Seiler 13501 W. 85th N. Valley Center, KS 67147	Don Skokam 5825 Memphis Wichita, KS 67220

EQUUS BEDS GROUNDWATER MANAGEMENT DISTRICT NO. 2

Testimony Presented to the Kansas Department of Health and Environment Concerning the Proposed Municipal, Commerical, and Industrial Wastewater Lagoon Regulations

by
Michael T. Dealy, Manager
August 26, 2004

The Equus Beds aquifer is the principal source of fresh and usable water in south central Kansas. The aquifer underlies portions of a four-county area the size of the State of Rhode Island.

There are 1,620 non-domestic water wells that withdraw an average of 51.2 billion gallons from the aquifer each year.

Over 500,000 people, or 20 percent of the State's population, in Harvey, Sedgwick, McPherson and Reno counties rely on the aquifer for drinking water and other daily needs.

Almost 100,000 acres are irrigated using groundwater from the Equus Beds aquifer. Total livestock and crop production was over \$300 million in 1991.

The Equus Beds aquifer is the lifeblood for the area's businesses and industries. The total annual payroll for industry and commerce in the four county area was over five billions dollars based on a 1990 econmonic report.

Depth to the top of the Equus Beds aquifer ranges from less than ten feet to 110 feet below land surface. Depth to water in the northern portion of the District is greater and ranges from 40 feet to 110 feet; in the southern portion it ranges from less than ten to 40 feet.

Distinctive soil, climate, geological and hydrologic conditions in the Equus Beds region are unique and increase the

aquifer's sensitivity to normal man-made activities and substantially increase the contamination risk to the Equus Beds aquifer. Unless enhanced water protection measures are taken in these sensitive groundwater areas, the aquifer is at-risk to contamination from municipal, commercial, and industrial wastewater lagoons.

Kansas Department of Health and Environment's present lagoon guidelines allow infiltration rates of 0.125 inch (1/8 inch) and 0.25 inch (1/4 inch) per day or 45 inches and 90 inches per year respectively. While such guidelines and construction requirements are adequate for a majority of the State, they are grossly inadequate for the Equus Beds aquifer and placing it at great risk for contamination by a lagoon.

For example, a one-acre wastewater lagoon 210 feet by 210 feet, with an infiltration rate of 0.125 inch per day has the potential to infiltrate or seep 1.2 million gallons of wastewater per year through the bottom and sides of the lagoon into the underlying Equus Beds aquifer.

Historical data demonstrate that fluid in such disposal lagoons will infiltrate shallow groundwater and contaminate it.

One need only look to the Burrton and Hollow Nikkel Oil Fields for a case study in the use of such lagoons and the resulting groundwater contamination.

From 1930 to 1960, lagoons were permitted by State regulations and used by industry to dispose of saltwater from oil production.

A large percentage of an estimated 1.9 million tons of salt infiltrated, as brine, through the bottom and sides of the lagoons and contaminated a 70-square mile area of the Equus Beds aquifer.

Thirty years after the last brine disposal lagoon was decommissioned and closed, saltwater contamination continues to pollute water wells in the area, costing public and private water well owners tens of thousands of dollars.

Two groundwater management areas have been established to manage and remediate the groundwater pollution from hundreds of these lagoons. The cost to manage and remediate the contaminated area's has largely been endured by the state-taxpayers and has cost hundreds of thousands of dollars to date.

Adopting a pro-active stance in 1986, the Kansas Corporation Commission, with support from the oil and gas industry and the groundwater management district, adopted lagoon regulations that protect fresh and usable waters from contamination associated with surface ponds used during oil and gas production.

The District has reviewed the wastewater lagoon regulations K.A.R. 28-16-160 through K.A.R. 28-16-174 proposed by the Kansas Department of Health and Environment.

The District finds the proposed regulations afford the following groundwater protection measures:

- ☐ enhanced water protection requirements for the Equus Beds aquifer region;

- ☐ minimum separation distance of ten feet from the lagoon bottom to groundwater level;
- ☐ single membrane lagoon liner requirements in the Equus Beds region for municipal, commercial and industrial domestic wastewater lagoons;
- ☐ dual membrane lagoon liner requirements in the Equus Beds region for industrial lagoons treating process wastewater;
- ☐ minimum infiltration rate of 1/64 inch per day for lagoons in the Equus Beds region;
- ☐ postconstruction testing of lagoon liners;
- ☐ department authority to require the use of groundwater monitoring wells;
- ☐ a lagoon closure plan addressing procedures to deactivate the treatment lagoon and associated equipment and properly dispose of wastewater, sludge, synthetic liners and any contaminated soil and groundwater; and
- ☐ department authority to grant a variance if the request meets the intent of the regulations and provides for the protection of public health and the environment.

Based on the review findings, the Board of Directors, Equus Beds Groundwater Management District, at the August 10, 2004, meeting voted to support the adoption of the proposed municipal, commercial and industrial wastewater lagoon regulations.

Secretary Bremby and Kansas Department of Health and Environment staff is to be commended for presenting the proposed regulations, which will provide the needed protection for the fresh and usable waters of the Equus Beds aquifer.

**COMMENTS TO THE KANSAS DEPT. OF HEALTH AND ENVIRONMENT
FROM THE REGIONAL ECONOMIC AREA PARTNERSHIP**

**PUBLIC HEARING ON PROPOSED COMMERCIAL, DOMESTIC, AND
INDUSTRIAL WASTEWATER LAGOON REGULATIONS**

**August 26, 2004
Wichita, Kansas**

Mayor John Waltner, Hesston, chair of the REAP Legislative Committee

Good evening. My name is John Waltner. I am the mayor of the City of Hesston and currently serve as the chair of the Legislative Committee of the Regional ~~Area~~ Economic Area Partnership, or REAP.

REAP is a council of local governments in South Central Kansas. The thirty-one city and county governments in REAP have voluntarily joined together for two primary reasons: first, to guide state and national actions that affect economic development in the region; and second, to adopt joint efforts among member governments that enhance the regional economy.

One of the most significant regional priorities for REAP is the protection of the public water supply in South Central Kansas. The Equus Beds aquifer is a primary source of water for many REAP communities. This aquifer is clearly critical to the economy of South Central Kansas and to the quality of life of its residents.

On February 10, 2003, the local governments in REAP adopted a resolution supporting greater protection of the Equus Beds aquifer. A copy of this resolution is attached to the hardcopy of my comments.

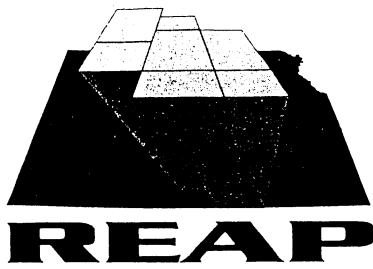
The members of REAP believe that the protection of the aquifer must be enhanced by the adoption and enforcement of site specific regulations. The geography and geology of the Equus Beds is unique to other aquifers in the state and it appears obvious that a “one-size fits all” approach to water protection is not good public policy for the state of Kansas.

The regulations being proposed recognize the sensitive and fragile nature of the Equus Beds. REAP is supportive of the elements in the proposed regulations that require:

- Additional synthetic liners for all waste water lagoons in the Equus Beds aquifer.
- Increased monitoring for waste water treatment lagoons.
- Closure plans for waste water lagoons.
- Minimum separation of ten feet from a waste water lagoon’s liner to groundwater.

Members of REAP have had the opportunity to meet with Secretary Bremby and the KDHE staff. We are pleased with the commitment that is now being brought to the issue of groundwater protection. On behalf of REAP I would like to thank Secretary Bremby and KDHE for making this issue a high priority.

Thank you for this opportunity to meet with you this evening. I will be glad to respond to any questions.



Regional Economic Area Partnership

strengthening the economy of south central Kansas through joint action of cities and counties

Resolution No. 03-01

A RESOLUTION BY THE REGIONAL ECONOMIC AREA PARTNERSHIP IN SUPPORT OF GREATER PROTECTION FOR THE EQUUS BEDS AQUIFER

ANDOVER

Mayor Dennis Bush

ARKANSAS CITY

Commissioner Charles Jennings

AUGUSTA

Mayor Ross Rountree

BELAIRE

Mayor Gary O'Neal

BENTLEY

Mayor Sandra Wellman-Moon

BENTON

Mayor Rebecca Edson

BUTLER COUNTY

Commissioner Will Carpenter

CHENEY

Mayor Carl Koster

CLEARWATER

Council Member David Wells

CONWAY SPRINGS

Mayor Wayne Taylor

DERBY

Mayor Richard Standrich

EL DORADO

Mayor Connie Phillips

HALSTEAD

Mayor Bill Ewert

HARVEY COUNTY

Commissioner Kenneth Meier

HAYSVILLE

Mayor Bruce Armstrong

HESSTON

Council Member Howard Wohlgemuth

HUTCHINSON

Council Member Joel Haag

MAIZE

Mayor Michael Hanshaw

MULVANE

Mayor James Ford

NEWTON

Commissioner Carl Harris

PARK CITY

Mayor Emil Bergquist

RENO COUNTY

Commissioner Frances Garcia

ROSE HILL

Council Member Marsha Francis

SEDGWICK

Mayor D. Keith DeHaven

SEDGWICK COUNTY

Commissioner Carolyn McGinn

SUMNER COUNTY

Commissioner Robert Courtney

TOWANDA

Mayor Leonard Albert

VALLEY CENTER

Mayor James 'Jet' Truman

WELLINGTON

Mayor James Chisham

WICHITA

Mayor Bob Knight

WINFIELD

Mayor Mike Ledy

WHEREAS, the Equus Beds aquifer is the principal source of fresh and usable water in South Central Kansas wherein over 1600 non-domestic water wells withdraw approximately 51.2 billion gallons from the aquifer each year to provide drinking water for 20 percent of the State's population, and to support a large percentage of the State's business, industrial and agricultural base; and

WHEREAS, the aquifer provides fresh and potable water daily to more than 500,000 people and over 15,000 businesses in the REAP area and is the principal or significant public water supply for the communities of Andover, Bel Aire, Benton, Bentley, Buhler, Burrton, Canton, Galva, Halstead, Haven, Hesston, Hutchinson, Kechi, Moundridge, Mount Hope, Newton, North Newton, Park City, Pretty Prairie, Rose Hill, Sedgwick, South Hutchinson, Valley Center, and Wichita, and the Equus Beds aquifer provides groundwater for hundreds of agricultural producers and industries in the region; and

WHEREAS, the Equus Beds aquifer is a priceless natural resource and classified by the State as a sensitive groundwater area due to the distinctive soil, climate, geological and hydrologic conditions which substantially increase the potential and vulnerability to contamination in the Equus Beds region; and

WHEREAS, the Equus Beds aquifer is critical to the ongoing well-being of the citizens, businesses and industries that form the regional economy of South Central Kansas; and

WHEREAS, current environmental laws and regulations, as applied to activities in the Equus Beds aquifer, fail to provide sufficient protection for preserving and protecting the Equus Beds and the groundwater that serve the residents, businesses and industries of South Central Kansas who rely on these vulnerable and environmentally sensitive resources for daily needs such as water supply, irrigation, health, safety and the overall economic livelihood of the region; and

WHEREAS, studies such as those commissioned by the State of Kansas and conducted by Kansas State University have clearly demonstrated the necessity of regulations and standards that are based on the specific environmental conditions in a particular location, and have clearly demonstrated the inadequacy of one-size-fits-all regulations; and

WHEREAS, these studies have provided the basis for science-based regulations and standards which can be applied on a site-specific basis; and

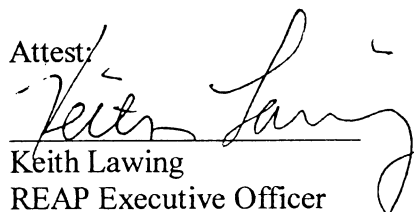
WHEREAS, the thirty-one REAP member communities throughout six counties in South Central Kansas have joined together to guide state and national actions that affect economic development in the region and to adopt joint actions among member governments that enhance the regional economy;

NOW, THEREFORE, BE IT RESOLVED, by the Regional Economic Area Partnership, that Governor Sebelius is hereby urged to direct and support efforts by the Kansas Department of Health and Environment and other State agencies to continue to recognize the importance of the Equus Beds aquifer to the future of South Central Kansas and direct and support the development and adoption of science based, site-specific water quality regulations, particularly in sensitive groundwater areas such as the Equus Beds aquifer.

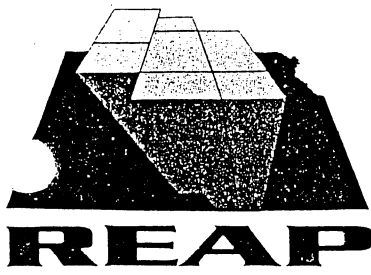
ADOPTED this 10th day of February, 2003



Mayor Mike Ledy, Winfield
REAP Chairman

Attest:


Keith Lawing
REAP Executive Officer



Regional Economic Area Partnership

strengthening the economy of south central Kansas through joint action of cities and counties

Resolution No. 03-01

A RESOLUTION BY THE

REGIONAL ECONOMIC AREA PARTNERSHIP

**IN SUPPORT OF GREATER PROTECTION FOR THE EQUUS
BEDS AQUIFER**

ANDOVER

Mayor Dennis Bush

ARKANSAS CITY

Commissioner Charles Jennings

AUGUSTA

Mayor Ross Rountree

BEL AIRE

Mayor Gary O'Neal

BENTLEY

Mayor Sandra Wellman-Moon

BENTON

Mayor Rebecca Edson

BUTLER COUNTY

Commissioner Will Carpenter

CHENEY

Mayor Carl Koster

CLEARWATER

Council Member David Wells

CONWAY SPRINGS

Mayor Wayne Taylor

DERBY

Mayor Richard Standrich

EL DORADO

Mayor Connie Phillips

HALSTEAD

Mayor Bill Ewert

HARVEY COUNTY

Commissioner Kenneth Meier

HAYSVILLE

Mayor Bruce Armstrong

HESSTON

Council Member Howard Wohlgemuth

HUTCHINSON

Council Member Joel Haag

MAIZE

Mayor Michael Hanshaw

MULVANE

Mayor James Ford

NEWTON

Commissioner Carl Harris

PARK CITY

Mayor Emil Bergquist

RENO COUNTY

Commissioner Frances Garcia

ROSE HILL

Council Member Marsha Francis

SEDGWICK

Mayor D. Keith DeHaven

SEDGWICK COUNTY

Commissioner Carolyn McGinn

SUMNER COUNTY

Commissioner Robert Courtney

TOWANDA

Mayor Leonard Albert

VALLEY CENTER

Mayor James 'Jet' Truman

WELLINGTON

Mayor James Chisham

WICHITA

Mayor Bob Knight

WINFIELD

Mayor Mike Ledy

WHEREAS, the Equus Beds aquifer is the principal source of fresh and usable water in South Central Kansas wherein over 1600 non-domestic water wells withdraw approximately 51.2 billion gallons from the aquifer each year to provide drinking water for 20 percent of the State's population, and to support a large percentage of the State's business, industrial and agricultural base; and

WHEREAS, the aquifer provides fresh and potable water daily to more than 500,000 people and over 15,000 businesses in the REAP area and is the principal or significant public water supply for the communities of Andover, Bel Aire, Benton, Bentley, Buhler, Burrton, Canton, Galva, Halstead, Haven, Hesston, Hutchinson, Kechi, Moundridge, Mount Hope, Newton, North Newton, Park City, Pretty Prairie, Rose Hill, Sedgwick, South Hutchinson, Valley Center, and Wichita, and the Equus Beds aquifer provides groundwater for hundreds of agricultural producers and industries in the region; and

WHEREAS, the Equus Beds aquifer is a priceless natural resource and classified by the State as a sensitive groundwater area due to the distinctive soil, climate, geological and hydrologic conditions which substantially increase the potential and vulnerability to contamination in the Equus Beds region; and

WHEREAS, the Equus Beds aquifer is critical to the ongoing well-being of the citizens, businesses and industries that form the regional economy of South Central Kansas; and

WHEREAS, current environmental laws and regulations, as applied to activities in the Equus Beds aquifer, fail to provide sufficient protection for preserving and protecting the Equus Beds and the groundwater that serve the residents, businesses and industries of South Central Kansas who rely on these vulnerable and environmentally sensitive resources for daily needs such as water supply, irrigation, health, safety and the overall economic livelihood of the region; and

WHEREAS, studies such as those commissioned by the State of Kansas and conducted by Kansas State University have clearly demonstrated the necessity of regulations and standards that are based on the specific environmental conditions in a particular location, and have clearly demonstrated the inadequacy of one-size-fits-all regulations; and

WHEREAS, these studies have provided the basis for science-based regulations and standards which can be applied on a site-specific basis; and

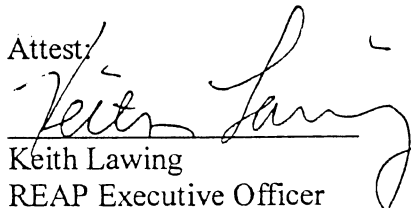
WHEREAS, the thirty-one REAP member communities throughout six counties in South Central Kansas have joined together to guide state and national actions that affect economic development in the region and to adopt joint actions among member governments that enhance the regional economy;

NOW, THEREFORE, BE IT RESOLVED, by the Regional Economic Area Partnership, that Governor Sebelius is hereby urged to direct and support efforts by the Kansas Department of Health and Environment and other State agencies to continue to recognize the importance of the Equus Beds aquifer to the future of South Central Kansas and direct and support the development and adoption of science based, site-specific water quality regulations, particularly in sensitive groundwater areas such as the Equus Beds aquifer.

ADOPTED this 10th day of February, 2003



Mayor Mike Ledy, Winfield
REAP Chairman

Attest:


Keith Lawing
REAP Executive Officer

SPECTRUM Technologists

P.O. Box 12863
Kansas City, KS 66112
(913) 334-0556

8-03-04

Donald Carlson
KDHE, BOW
1000 SW Jackson Suite 420
Topeka, Kansas 66612-1367

Subj: Comments on new administrative regulations
Addressing municipal, commercial and industrial wastewater lagoon requirements

These comments are presented on behalf of the Kansas Chapter of the Sierra Club. Except for the three reservations listed immediately below, the proposed rules appear to be reasonable and adequately calibrated to the potential risks posed by the subject waste waters *when lagoons are installed over the Equus Beds or over sensitive ground waters of the state*. The three concerns we have are as follows:

1. The rules do not list certain key quality control standards commonly employed during and after lagoon construction such as degree of compaction, number and thickness of lifts, clearance of objects that can damage liners and measures to protect liners from damage after completion. Instead the department simply looks at the resultant seepage rate achieved during a single post construction seepage test. The inclusions of such standards would provide greater assurance that seepage will remain within the desired rate limit over the life of the facility.
2. The closure and proper remediation of lagoons that have been abandoned is crucial to the long run protection of groundwater. The department needs to specify the procedures they will employ to consider the closure plan and needs to make a general statement about what soil and groundwater contamination standards they will apply. We commend the Department for specifically stating that the owner will be responsible for cleaning up contaminated soil and groundwater beneath the lagoon. This will give owners incentive to consider both the short and long run costs associated with the quality of construction of their facility.
3. The definition of a municipal wastewater treatment system would appear to allow systems run by municipalities that receive significant inputs from industry, such as the Dodge City, Kansas plant, to use a much weaker standard for lagoon construction even though the strength and toxicity of the wastewater may be much greater than that of a system treating entirely domestic sewage. This loop hole will encourage certain industries like packing and rendering plants to divert their wastewater to municipal systems even though they will have to pay a user fee.

The main problem with the rules, and it's a very big one, is that there is little justification for allowing municipal lagoons and lower risk commercial/industrial lagoons installed in areas other than the Equus Beds and over sensitive groundwater to be built to a weaker standard.

The Kansas State University lagoon study did prove that lagoon seepage rates are usually much less than the current limit of 1/4 inch per day. However the study did not prove, nor was it designed to prove, that lagoons do not pollute deeper ground water. Nor did the study prove that

the 1/4 inch seepage standard, which has no scientific basis, actually prevents the pollution of groundwater. That's because the K State researchers did not actually test for contamination under lagoons installed over deeper ground waters outside the Equus Beds area.

The bifurcation of lagoon rules on the basis of geographic location is apparently based on the erroneous notion put forth by K State researchers that ground waters at a depth of 100 to 130 feet or greater, often found in western Kansas, are somehow immune from contamination. This notion was entirely based on certain studies from the literature cited by K State researchers. These studies were shown to be invalid or inapplicable to the High Plains aquifer by this author in reports issued in 1998 and 2000. Relevant excerpts are attached for your convenience.

More recent data from the United States Geological Survey confirms our previous conclusion. For this analysis we have extracted data relating to Kansas. In one study (USGS WRI-02-4112) the USGS analyzed 25 randomly selected domestic wells in southwest Kansas which were qualified by adequate well construction. Our attached Graph 1 shows little or no correlation between depth to ground water and nitrate values. Three of the four highest nitrate values occurred in wells where the water table was in excess of 150 feet deep.

In a second study (USGS WRI-03-4219) USGS installed 27 monitoring wells in western Kansas in proximity to irrigated fields. Since USGS installed these wells, the quality of their construction is presumably assured. The USGS selected only wells with water tables less than 200 feet down. The water table in most, though not all, of western Kansas is less than 200 feet deep. Our attached Graph 2 shows, again, little or no correlation between depth to ground water and nitrate values. *In fact, of the ten values that exceeded the 10 parts per million maximum contaminant level (the health standard) six were in water tables over 130 feet deep.*

It is true that the risk associated with lagoons that treat entirely domestic sewage or low risk industrial waste waters would be much less than that associated with livestock lagoons which are not considered in these rules. However there is little justification for assuming this risk is insignificant, especially since the proposed rules appear to allow industrial dischargers to skirt the stricter industrial lagoon construction requirement by discharging all or part of their industrial process waste to the public sewer system. One need only look at the Dodge City plant for an example of combined systems that have polluted groundwater.

The KDHE is to be commended for attempting to strengthen protection of the state's ground water. However these proposed rules fail to achieve an adequate level of protection in large parts of the state served by the High Plains aquifer. We respectfully request that KDHE correct the stated shortcomings and extend protection to ground water relied upon by all citizens in the state of Kansas. Thanks for the opportunity to make these comments.

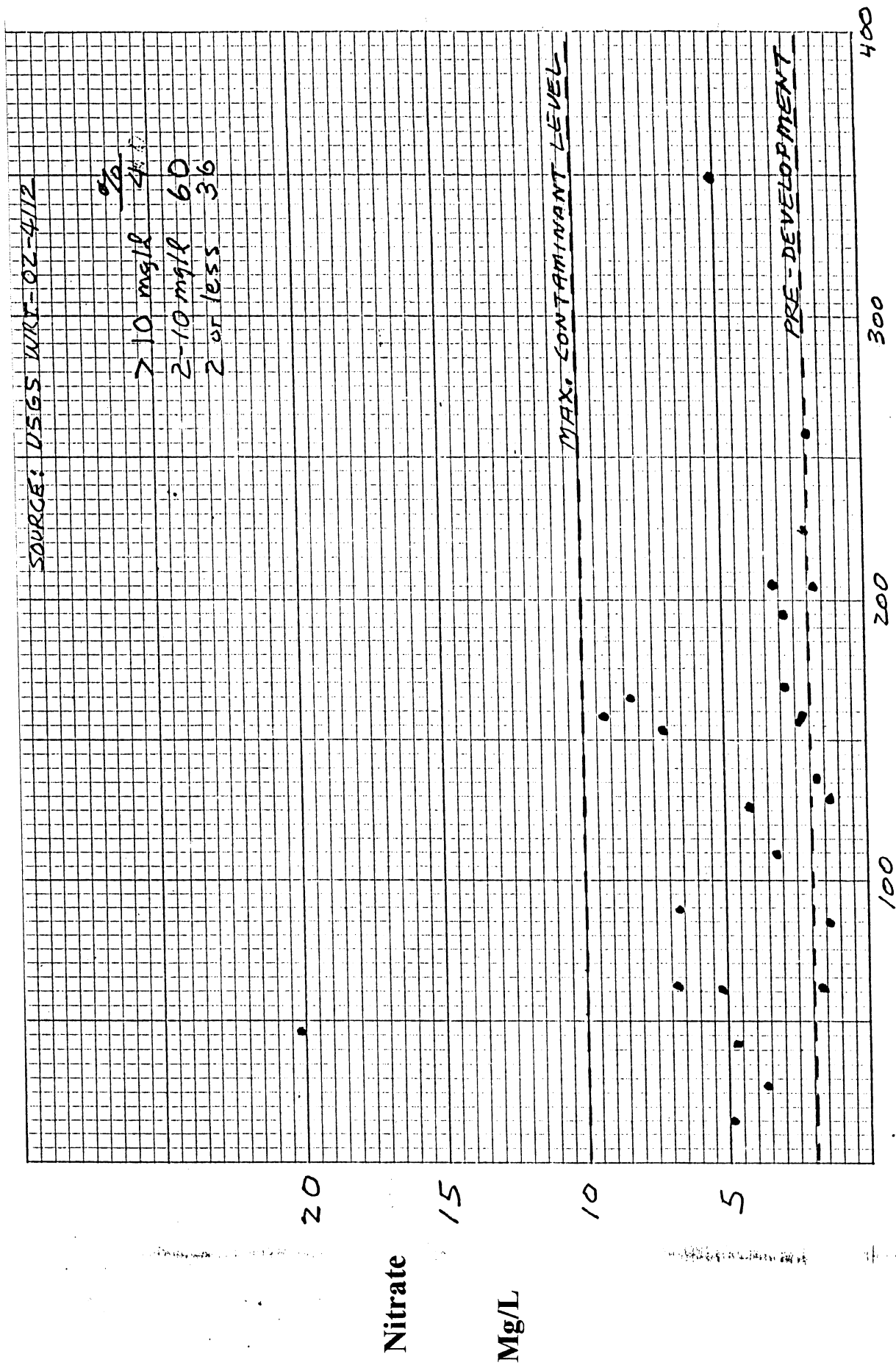
Sincerely,

A handwritten signature in black ink, appearing to read "Craig S. Volland". The signature is fluid and cursive, with a large, stylized "C" at the beginning.

Craig S. Volland
President

NITRATE IN SOUTHWEST KANSAS

N = 25 Randomly Selected Domestic Wells

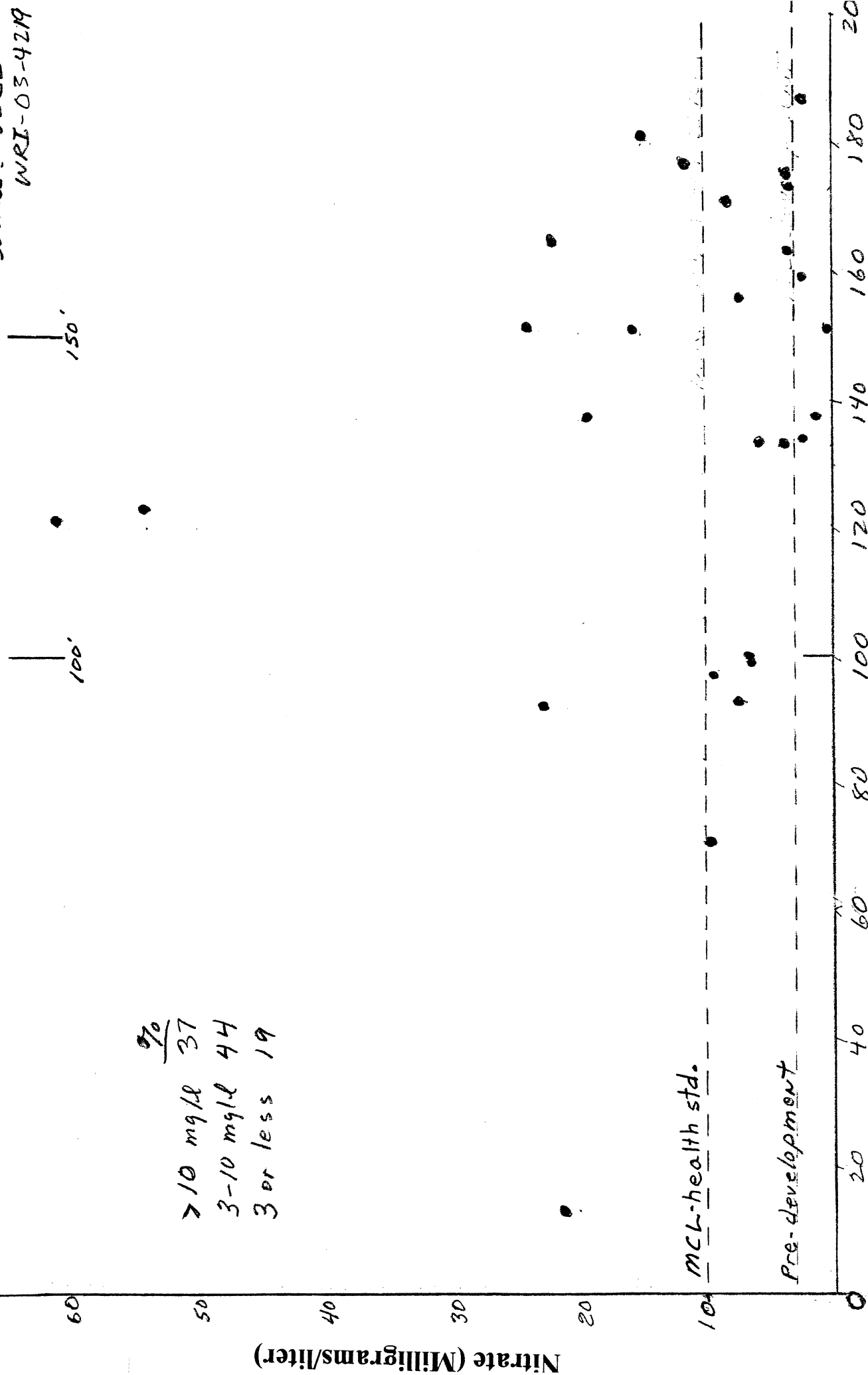


GRAPH 2

NITRATE IN WESTERN KANSAS GROUNDWATER

N = 27 Monitoring Wells installed by USGS in Proximity to Irrigated Fields

SOURCE: USGS
WRI-03-4219



Depth to Water (Feet)

COVER +
Excerpt relating to
depth to groundwater

SERIOUS GAPS REMAIN IN THE REGULATION OF SWINE FEEDING FACILITIES IN KANSAS

By Craig S. Volland, *QEP*
August 23, 2000

Introduction

In 1998 the Kansas Legislature enacted HB 2950 which applied exclusively to swine feeding facilities. HB 2950 modestly tightened the standards for lagoon seepage, significantly improved rules for waste utilization, operator training, and record keeping, returned the facility setback distance to just short of the guideline in place prior to 1994, and required financial assurance and closure plans for large facilities. KDHE has subsequently imposed or mediated certain administrative improvements in response to public comment on permits for new large hog feeding facilities in western Kansas.

However, serious gaps remain in the regulatory system for Confined Swine Feeding Facilities. Under current rules the quality of the rural environment near these facilities can be seriously degraded by obnoxious odors. KDHE has done little to significantly lessen odors or to investigate the risk of disease transmission from spraying wastewater or risks that may be associated with emissions of toxic air contaminants from large, conventional, swine wastewater disposal systems. In this respect no serious consideration has been given to the relationship between risk and the size of these facilities. One such facility is now proposed to house up to 86,400 adult (finisher) pigs. In addition serious questions remain regarding the monitoring of wastewater application to fields, phosphorus runoff in big storms, wastewater salinity, seepage from lagoons in sandy areas, remediation of lagoons at medium-sized facilities at closure, and water usage.

KDHE is now in the process of revising Kansas livestock waste rules. These will presumably extend to seepage standards for cattle feedlot runoff impoundments and dairy wastewater lagoons. Cattle feedlots and dairies can be a significant threat to the environment. However, Kansas State University (KSU) Research has noted that hog wastewater is considerably more concentrated and toxic than cattle feedlot runoff and has suggested that species specific rules are justified. The new draft rules are expected to be issued for public comment by early Fall.

Regulation by Animal Species. The Kansas Pork Producers Council is somewhat justified in complaining that they have been unfairly singled out for regulation. However, the industry is building ever larger, clusters of facilities using anaerobic lagoon and sprayfield technology, which the following pages will show, poses inadequately

*Craig Volland is President of Spectrum Technologists, an environmental consulting firm in Kansas City, Ks. founded in 1982. He is certified as a Qualified Environmental Professional by the Institute for Professional Environmental Practice of Pittsburgh, Pa. . He holds a degree in Civil Engineering from Duke University and he is a member of the Air and Waste Management Association. The Sierra Club paid for most expenses associated with this report. The time was donated.

KSU also suggested that some of the ammonium under the lagoon disappears through the process of denitrification. But this process requires that ammonium first react with oxygen to form nitrate. Then denitrifying bacteria must be present in sufficient quantity along with a carbon source to change the nitrate to harmless nitrogen gas. Actual measurements of microbial activity under one cattle lagoon did not demonstrate that these conditions were present. They did find an elevated *population* of heterotrophic bacteria (that feed on organic material) but they did not perform a mass balance to determine their significance. For example, the gradual, rather than precipitous decline in ammonium with depth of the probe might have been explained by a mass balance showing the nitrogen mass in these bacteria increasing with depth as the ammonium disappeared.

KSU's subsoil measurements, though interesting, are inconclusive. This technique cannot explain the fate of ammonium that may have converted to nitrates as it hit air voids beneath the lagoon. Nitrates are highly mobile and would move on with the liquid well ahead of the main mass of ammonia. Recent research by Parker et al⁶⁴ suggests that the nitrate reaction would dominate along the sides of the lagoon which have continual access to air from above, particularly through root holes. The only certain way to validate this KSU model is to actually test the groundwater beneath some of the older lagoons, which has not been done, at least not in the deeper water tables of western Kansas. Very few monitoring wells have been required in the past at confined animal feeding facilities. This is why we know so little about what happens to lagoon seepage.

Ammonia content of waste water. KSU researchers may have underestimated the concentration of ammonia in hog wastewater, which is a key factor in the lagoon model. They apparently have never considered the organic nitrogen fraction in lagoon wastewater. Parker et al found large quantities of organic nitrogen 20 feet below a cattle lagoon. There's reason to believe that conditions would be suitable below lagoons for organic nitrogen to continue to break down into ammonia.

Further KSU's computed average of 775 mg/l ammonia in swine lagoons is far below that found in the Iowa State study⁵⁹ which for anaerobic lagoons was 1438 mg/l. This difference seems greater than can be explained by the somewhat warmer climate in Kansas. Loading rates of the lagoons could be different, but Seaboard and other swine facility operators use the same, lower, NRCS loading factor as was probably used in Iowa some years ago. Age, as well as the type (finisher, sow, nursery) of lagoons may be a factor. This point needs further analysis before average numbers are plugged into the design model.

Depth to groundwater. KSU has consistently maintained that groundwater more than 100 below confined animal feeding facilities is essentially safe from contamination. Previously they cited two studies we have documented to be invalid or not relevant to the western Kansas geological setting.⁶³ More recently they cite the abstract of a paper summarizing the results of groundwater monitoring around 94 Dairies in New Mexico^{62, 77} which found an inverse correlation between nitrate contamination and depth to the water

table. This paper has not yet been published. However we obtained from Mr. Chesney and his associates at EPA Region 6 the data pertaining to dairies operating over a water table more than 100 feet from the surface, considered by KSU to be deep groundwater.

We found that only 13 of the 94 sites were situated over deep groundwater, which ranged up to 375 feet. All of these had been in operation only five years or less before the date of the most recent groundwater sample. Most, if not all, had clay liners. KSU has documented that even modest amounts of clay retards the migration of nitrogen for several years. Only a single sample was available at one site. Measurements at three other sites were essentially baseline (roughly coincident with facility start up). In one case (135 ft water table) a down gradient well documented an increase in nitrates from 2.1 mg/l in July of 1997, to 5.65 mg/l in Oct. '97, to 12.1 mg/l in Feb. '98 and to 15.8 mg/l in May '98. This would appear to track a breakthrough in nitrogen to the groundwater. Thus, if anything, this data contradicts the KSU position on pollution of deep groundwater.

KSU's position is also contradicted by the recent USGS research, discussed earlier, where high levels of nitrates, traced to animal waste, were found in the water table 167 feet down, near Garden City. Their claim is also contradicted by monitoring well data at the Dodge City wastewater plant and other data we have located in Kansas.⁶³ There may be a depth below which nitrate pollution does not occur, but it isn't 100 feet. The depth of water table at existing Seaboard sites ranges from about 85 to 224 feet with an average of 160.⁹³

Depending on how KDHE applies the KSU model this debate may become moot. For example the standard may be set that all the ammonia must be contained in the first 10 feet of subsoil and that the groundwater must be more than ten feet below the lagoon bottom. In this case the depth to groundwater is less relevant.

Groundwater quality in Kansas. KSU's 1998 lagoon study update contained a report suggesting that nitrates in Kansas groundwater were not increasing.³³ The Kansas Geological Survey issued a report in June of 1999 which showed that nitrates had increased, from the 1970's to the 1990's, in three fourths of the wells they surveyed in central and western Kansas.⁷² This indicates that nitrates are indeed moving from the surface to the groundwater. They suggested that this could be both a function of agricultural pollution and poor well construction. More recently the KGS published a report showing that, of some 112 samples analyzed to determine the source of nitrogen, some 29% came from commercial fertilizer, 42% from animal waste (which may include septic tank seepage), 22% came from mixed sources, and 7% other.⁸⁰

Synthetic Liners in Kansas. We would concede that the risk of groundwater contamination by *nitrogen* is essentially zero where a lagoon is lined with 40 mils of plastic and a compacted soil subliner under which at least 10 feet of substantially uniform lean or fat clay soils exist on all sides and the bottom, and the operator has provided financial assurance for closure. The latter assurance is needed because synthetic liners

316-529-8944

Cover + Excerpt re: depth
to groundwater**CRITIQUE OF THE KANSAS STATE UNIVERSITY LAGOON RESEARCH PROJECT**

by Craig S. Volland, QEP
President, Spectrum Technologists*

August 7, 1998

Introduction

The Executive Summary of Kansas State University's Research Report entitled "Evaluation of Lagoons for Containment of Animal Waste, dated April 28, 1998, was presented to a committee of the State Legislature on April 29, 1998 and received wide media coverage in the state. The full report was issued by the Kansas Center for Agricultural Resources and the Environment on June 9, 1998. The Director of this office of the University stated that over 100 copies had been requested by that time, many from out of state. Due to the widespread interest in the University's work this author felt it was important to subject the results of this project to a detailed evaluation. This evaluation would assess, insofar as possible, whether the data is valid and correctly interpreted, to see if references cited in the literature have been properly applied to conditions in Kansas, and to determine if the conclusions offered by the K State research staff were supported adequately by the information presented in the report. Many of the expenses incurred during the preparation of this critique were paid by the Kansas Chapter of the Sierra Club. However no professional fees were solicited by or paid to the author for this work by the Sierra Club or any other person or entity.

Since the information that was presented to the Legislature and to the general public was based primarily on the statements contained in the Executive Summary of the report, this author will focus on key statements made in that portion of the report. These statements will be identified and emphasized by italics and grouped as "E1, E2" etc to correspond to the numbering in the Executive Summary. As appropriate, statements from the five chapters will also be examined. Lack of mention of a statement does not constitute agreement on our part. Rather it means we deem the statement reasonable, or our concern is not great enough to warrant special attention at this time. Certain graphs and figures cited from K State's April 28 report are grouped together in the Appendix and are referred to by their original numbers. New figures and tables from other sources are called "exhibits".

*Craig Volland is President of Spectrum Technologists, an environmental consulting firm in Kansas City, Ks. founded in 1982. He is certified as a Qualified Environmental Professional by the Institute for Professional Environmental Practice of Pittsburgh, Pa. . He hold a degree in Civil Engineering from Duke University and he is a member of the Air and Waste Management Association. He is a member of the Sierra Club and along with attorney, John Carter, he authored the report entitled, "Seepage Risk and KDHE Permitting of 37 Hog Wastewater Lagoons in SW Kansas." dated Oct. 3, 1996.

Barrington & Broughton²⁵ and NMDH&E¹⁴. Dr. Ham has generalized the results of two studies and applied them incorrectly to Kansas. Further his generalization about ammonium adsorption is not supported by his own citations. Significant amounts of ammonium were adsorbed in Culley and Phillips¹⁵ because all the test basins were underlain by clay. Miller, et al¹⁶ found that ammonium was retained beneath lagoons set in clay, but not beneath lagoons set in coarse-textured soil.

Dr. Ham's generalization is further contradicted by the numerous instances where large concentrations of ammonium have been found in groundwater beneath lagoons in Kansas. Most importantly, Dr. Ham is contradicted by K State's own lab core tests where high levels of ammonia passed through in a short period of time. These cores, from Stevens County, would be classified as coarse textured (sandy) soils. In fact that's why they were collected.

Nitrates in Kansas Groundwater

E4e. *"Regional and state wide studies of well-water samples found that nitrate concentrations in the groundwater were negligible, regardless of proximity to CAO's, when the depth to the water table was greater than 100 to 130 feet."* In his Chapter 1 summary paper, Dr. Ham goes on to say regarding a Missouri study, *"Data showed nitrates were essentially negligible when depth to groundwater was greater than 100 feet."* and concerning a study in Iowa. *"Again, data suggest that contamination is limited, regardless of conditions at the surface, when the depth to groundwater is greater than 100 to 130 ft."* Finally he states, *"Lagoons built in areas where depth to ground water is in excess of 100 to 130 ft probably pose no threat to local water resources."*

Review: Dr. Ham has incorrectly generalized to Kansas the results of studies conducted on groundwater in Iowa and Missouri. First, neither of these studies examined the nitrate vs depth relationship in the same aquifer. Second, the aquifers in question were not comparable to the High Plains/Ogallala aquifer, and thus these results were misapplied to the geological setting in Kansas of greatest concern. Third the Iowa study did not analyze relationships specific to confined livestock facilities, and the Missouri study is statistically flawed. Finally Dr. Ham did not check data in Kansas to see if his hypothesis was supportable.

That nitrates, on the average, decline with depth in an aquifer is generally true. However that has nothing to do with assessing the risk of contamination from a particular CAFO placed above a particular aquifer, such as the Ogallala, unless one can demonstrate conclusively that some physical or chemical process, such as denitrification, is the reason that nitrate pollution does not occur. In fact no scientific consensus exists in this regard. The depth gradient for nitrate may result, in part, because this contaminant is still on its way. Some studies suggest it will take 10-50 years for nitrate to reach deep groundwater even in sandy soils¹⁷.

The Iowa Study (as summarized by Nolan et al., USGS¹⁸). Nolan et al compared nitrate values in an aquifer in western Iowa (with a median well depth of 40 feet) to an aquifer in eastern Iowa with well depths ranging from 130 to 180 feet. Both aquifers lay in areas

deemed high risk for nitrate contamination. This was determined by estimated nitrogen input from agricultural activities (not specific to the location of CAFOs), population density, soil drainage characteristics, and the ratio of woodland acres to cropland acres. The median nitrate level in the western Iowa aquifer was 5.2 mg/l compared to 0.1 - 1.3 mg/l for the other. Nolan et al stated, "Most wells in western Iowa are completed in shallow water table aquifers that are more likely to contain elevated nitrate. Regional bedrock aquifers in the area are deep and difficult to access because of high drilling costs. In contrast, bedrock aquifers in eastern Iowa occur at moderate depths and are more accessible. Nitrate contamination of deeper groundwater in *bedrock aquifers* is less likely to occur."

Nitrate relationships were compared in two very dissimilar aquifers, not in the same aquifer. Thus the statistical difference in nitrate contamination is attributable to the fact that one of them is a *confined bed rock aquifer*, not because of any known reaction that would cause denitrification of potential pollutants. The relationship between nitrate contamination and the location of CAFOs was not addressed. Finally, the data was in terms of well depth and not depth to water. These are often not well correlated in the same aquifer. Clearly this study bears no relationship to the Ogallala aquifer in Kansas which is a deep, *unconfined* aquifer.

Missouri Study (Sievers & Fulhage¹⁹). In this study 25 wells were selected in each of nine study areas covering four major aquifers in Missouri. These are designated as glacial plains in the northwest and north central part of the state, Osage salt plains in the north central part, the Ozarks in the south and the Missouri River alluvium, none of which are similar to the Ogallala. Results regarding well depth and nitrates are shown in Exhibit 6 which K State researchers presented to the legislative committees in April. We have also included Exhibit 7 which contains the data.

First, Sievers and Fulhage have confused the term well depth shown in their Figure 2 (Exhibit 6) with "depth to water" in their Table 2 (Exhibit 7). We assume they mean well depth because elsewhere in their paper they state that "depth to aquifer" was less correlated to nitrates than well depth. They also did not control for the elevation of the screened interval where water is taken in. This can affect results because nitrates are usually higher at the top of the saturated layer. Second, Sievers and Fulhage compared average values among dissimilar aquifers, which means their conclusions do not necessarily apply to an individual aquifer. Third, the authors omitted Area D from Figure 2 which, had it been included, would have essentially eliminated the inverse correlation between well depth and nitrates (R^2 reduced from 0.81 to 0.11). Area D is just north of Columbia and just east of Moberly, Mo. Area D had an average nitrates of 11.3 mg/l and an average well depth of 55 meters (180 feet). The authors justified the omission of this data because "it is possible that the high nitrates are partially due to natural sources..." and, "a strong relationship between nitrate concentration and well depth has been observed by others." The exclusion of this data is highly questionable.

The 33 of 44 wells (75%) that exceeded the 10 mg/l maximum contaminant limit were located within 150 meters (500 ft) of an open lot or confined livestock operation. The data in this regard from Table 2 has been plotted in Exhibit 8 and shows a very strong

association with livestock facilities. The authors dismissed this result by correlating the 33 high nitrate wells with the distance to the livestock operation and found a weak positive result ($R^2 = 0.11$). However they acknowledged that open lots and confined systems were not differentiated. In any event, further analysis of such relationships would require a complicated study of each site involving analysis of chlorides, organics and ammonia and consideration of the direction of groundwater flow over time. The association could, for example, relate to the application of lagoon wastewater to surrounding land. No conclusions regarding proximity to livestock and nitrate pollution can be made from their work. *We conclude that this study is flawed and provides little or no information valid for the geological settings in western Kansas.*

In any event, to disprove Dr. Ham's hypothesis one needs only to present data showing that "non negligible" nitrate pollution is, in fact, occurring in the Ogallala. In this regard, the term "negligible" should mean at or near original pristine conditions, which is 1 to 2 mg/l in the SW Groundwater Management District²⁰. Since Dr. Ham's claim is based mainly on the Missouri study we presume he means the 1 mg/l values measured at about 100 feet of well depth. To be very conservative we will consider values of 5 mg/l or higher as clearly "non-negligible."

In this context, the Kansas Groundwater Quality Monitoring Network (Network) would have reliable figures for nitrate levels between 5 and 10 mg/l. Above 10 mg/l it would be less representative because the Network is comprised of 71% public wells⁹ which may be abandoned if over 10 mg/l. We obtained a listing by depth to water and by well depth of all samples in the 1992-1995 period where nitrates-N exceeded 5 mg/l. Depth of the water table was not available for 40% of Network sites, so we will present the data both in terms of depth of the well and depth to the water table. We have also set up a comparison for those samples taken in counties substantially within the area of the Ogallala aquifer where deep water is common.

KS. Groundwater Monitoring Network
Number of Samples from wells > 130 foot depth
 (1992-1995)

<u>Nitrate-N mg/l</u>	<u>All locations</u>	<u>Ogallala</u>	<u>Greatest well depth reported</u>
5.01 to 10.0	26	19	400
>10.0 MCL	<u>5</u>	<u>2</u>	250
Total	31	21	

Number of Samples from wells > 100 feet to water table
 (1992-1995)

<u>Nitrate-N mg/l</u>	<u>All locations</u>	<u>Ogallala</u>	<u>Greatest well depth reported</u>
5.01 to 10.0	9	8	280
>10.0 MCL	<u>2</u>	<u>1</u>	205
Total	11	9	

**Number of Samples from wells > 130 feet to water table
(1992-1995)**

<u>Nitrate-N mg/l</u>	<u>All locations</u>	<u>Ogallala</u>	<u>Greatest well depth reported</u>
5.01 to 10.0	6	5	280
>10.0 MCL	1	0	147
Total	7	5	

Another source of data is the Kansas 1993-1994 Private Water Well Survey²¹. Values below 10 mg/l were not broken out, but the range of well depths was provided. Instances of concern are listed below:

<u>County</u>	<u>No. Wells Tested</u>	<u>Number of wells</u>		<u>Mean depth(ft)</u>	<u>Range (ft)</u>
		<u>NO₃-N</u>	<u>> 10 mg/l</u>		
Grant	8	1		458	400-500
Greeley	7	1		179	125-240
Haskell	7	1		377	300-400
Kearney	7	1		299	260-300
Morton	8	2		175	100-200

In addition this author has run across other examples in the course of permit research that should be reliable data:

Dodge City Municipal Wastewater Irrigation Project

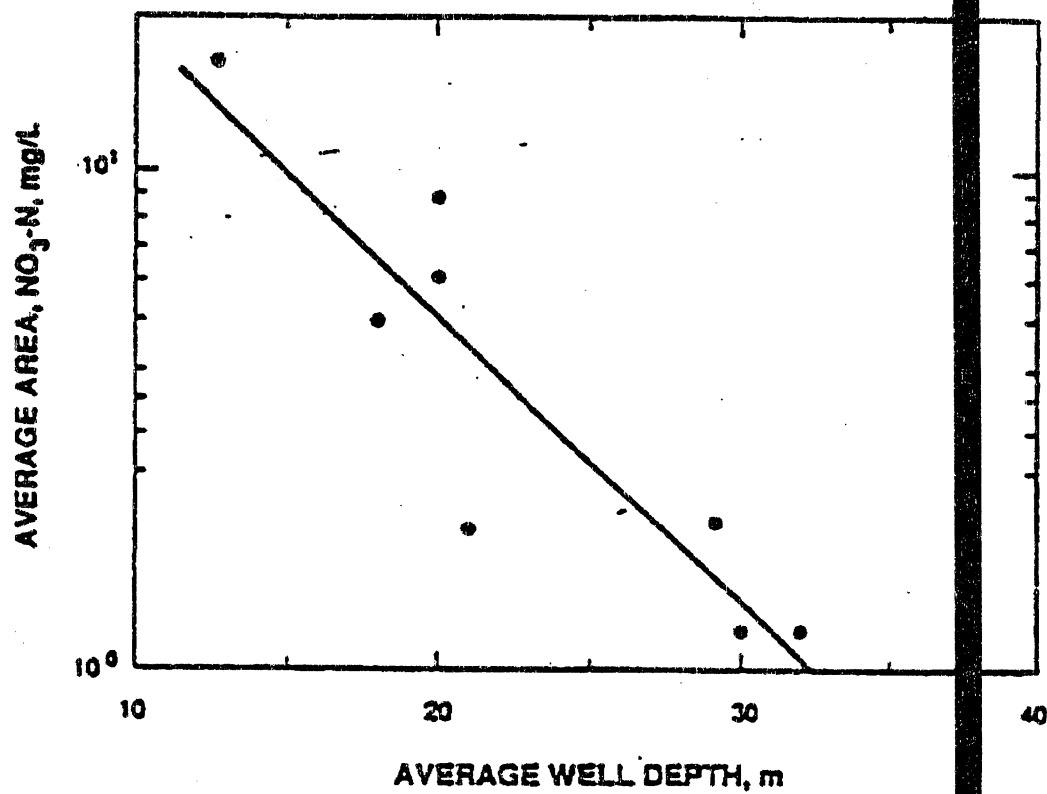
<u>Monitoring Well #</u>	<u>Nitrates-N mg/l</u>						<u>Approx. Depth to Water Table (ft)</u>
	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	
2	3.2	12.7	11.1	13.6	10.8	11.9	117
9	3.2	5.2	8.2	13.7	12.7	13.8	167

Note that elevated values persist for years, which suggests denitrification is not occurring to a significant event.

IBP, Inc. Holcomb, Ks. (Nov. '97 to April, '98 monthly values)

<u>Monitoring Well #</u>	<u>Nitrates-N mg/l</u>		<u>Approx. Depth to Water table(ft)</u>
	<u>Average</u>	<u>Range</u>	
13	11.7	3.5 - 39.5	110 - 115
14	13.0	9.4 - 18.5	110 - 115
16	25.6	3.5 - 48.5	115 - 120

Finally two nitrate samples from an irrigation well at a large Ford County cattle feedlot were obtained by KDHE in 1988 from a depth of 183 feet. The Nitrates-N values were 45.6 and 47.3 mg/l. Clearly Dr. Ham's hypothesis that what goes on at the surface doesn't matter when the ground water is 100 to 130 feet down is contradicted by data from western Kansas. It's highly unlikely that all the instances we have cited are due to surface contamination from poor well construction. In any event, the burden of proof is on K State Researchers. We recommend that the Kansas Geological Survey initiate a study to shed more light on the relationship between nitrates contamination and depth to the water table in Kansas.



Sievers and Fulhage, 1992
Figure 2 from paper.

Presented April 29 to legislative committee.

Exhibit 6

Exhibit 7

TABLE 1. Summary of nitrate and well location, age, and depth data for survey

	Area A	Area B	Area C	Area D	Area E	Area F	Area G	Area H	Area WF	Total
No. wells sampled	26	25	25	25	25	25	25	25	25	226
Avg. $\text{NO}_3\text{-N}$, mg/L	16.7	8.6	5.0	11.3	1.9	2.0	1.2	6.1	1.2	
No. wells (%) with detectable $\text{NO}_3\text{-N}$	26 (100)	19 (76)	20 (80)	22 (88)	22 (88)	25 (100)	21 (84)	22 (88)	23 (92)	200 (88)
No. wells (%) with $\text{NO}_3\text{-N} > 10$ mg/L	13 (50)	8 (32)	5 (20)	9 (36)	1 (4)	0 (0)	2 (8)	6 (24)	0 (0)	44 (19)
No. wells with $\text{NO}_3\text{-N} > 10$ mg/L and within 150 m of livestock	13	8	1	6	1	0	0	4	0	33 (15)
Avg. well age (yrs)	38	No data	32	40	38	20	24	44	19	
Avg. depth of water (m)	13	20	18	55	21	29	32	20	30	

SOURCE 19

1634

TRANSACTIONS OF THE ASAE

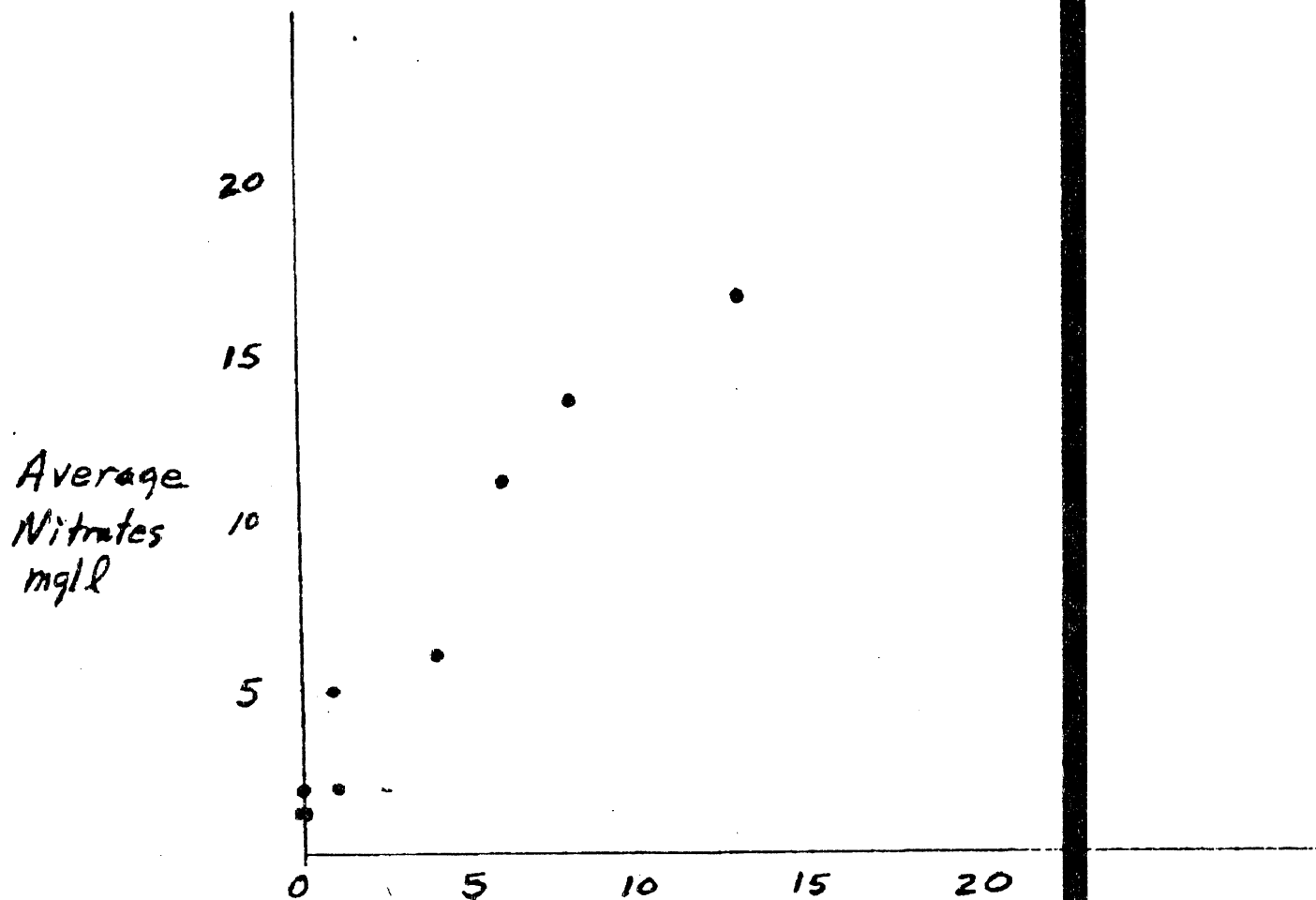


Exhibit 8

Average No. Wells with $\text{NO}_3\text{-N} > 10$ mg/L and
WITHIN 150 meters of livestock

SOURCE 19



August 26, 2004

City of Wichita Comments To Kansas Department of Health and Environment (KDHE)

RE: Public Hearing on Proposed Regulations for Municipal, Commercial and Industrial Lagoon Requirements

The City of Wichita has reviewed proposed regulations (28-16-160 through 28-16-174) proposed by the Kansas Department of Health and Environment (KDHE) regarding "Municipal, Commercial and Industrial Lagoon Requirements". The City appreciates the opportunity to provide comments on the proposed regulations as detailed below. Questions regarding this document can be directed to the following:

- D. Kay Johnson, Environmental Health Director, Dept. of Environmental Health at (316) 268-8387 (Email to: kjohnson@wichita.gov);
- David Warren, Director, Water & Sewer Department at (316) 268-4504 (Email to: dwarren@wichita.gov);
- Jerry Blain, Water Supply Projects Administrator, Water and Sewer Dept. at (316) 268-4578 (Email to: jblain@wichita.gov)

1. General Concepts

Over the years, the City of Wichita has expressed concern and provided specific information to KDHE regarding the importance of the protection of the Equus Beds Aquifer. This natural resource is classified by the State as a sensitive groundwater area due to distinctive soil, climate, geologic and hydrologic conditions which substantially increase the potential and vulnerability to contamination. The City of Wichita and other cities have existing water supply wells in the Equus Beds, which make this aquifer a vital water supply for the region. Therefore, the City concurs that this aquifer should have more stringent requirements for its protection than other areas of the State.

The City of Wichita is supportive of KDHE's requirements to:

- A) Require additional synthetic liners for all types of wastewater treatment lagoons in the Equus Beds Aquifer;
- B) Require a site-specific upgradient and downgradient groundwater monitoring program for each wastewater treatment lagoon in the Equus Beds Aquifer;
- C) Require facility closure plans for wastewater treatment lagoons in the Equus Beds Aquifer; and
- D) Require a separation of greater than 10 feet from a wastewater lagoon's bottom liner and the top of groundwater.

3. Existing Wastewater Treatment Lagoons

The proposed regulations state that existing facilities be exempt from meeting the new regulations as long as they do not pose a threat to public health or the environment. The City of Wichita agrees with this concept provided that all existing lagoons in the region of the Equus Beds have some type of periodic technical evaluation program, including some actual groundwater monitoring, to provide evidence that it is not a threat to human health or the environment.

4. Historical Groundwater Elevation Data

Groundwater elevations in the Equus Beds can vary substantially with time. For instance, groundwater levels in July and August can be several feet lower than in January, due to the influence of irrigation water usage. Water levels not only vary seasonally, but also over longer periods of time. Groundwater level monitoring by the U.S. Geological Survey has recorded that some areas in the City of Wichita's wellfield had declined as much as 40 feet between 1940 and 1993, and that some of those same areas have risen more than 20 feet since 1993. Therefore it is recommended that "historical" maximum groundwater levels be used whenever appropriate records are available to assure that there will be a minimum of 10 feet of separation between the bottom of a lagoon and the groundwater. It is recommended that reference to historic water levels be included in the definitions and in discussions of "Groundwater Separation Distance", especially in the Equus Beds. Historic data from the USGS, GMDs or other sources may be used to establish historic groundwater elevations.

Proposed regulation 28-16-163 proposes that test borings be drilled to a minimum depth of 10 feet, or to bedrock if bedrock is less than 10 feet. Because of the variation in water depths, it is recommended that test borings be drilled a minimum of 15 feet below the proposed lagoon bottom to help ascertain if groundwater separation is available, and the potential threat that the separation distance cannot be maintained.

If these regulations cannot be tailored to consider historic groundwater elevations, then monitoring wells should be used to verify that groundwater

separation requirements are maintained as part of the permit requirements for continued operation of new lagoons. If a new lagoon is constructed, and water levels rise, then the lagoon should be closed if the 10-foot separation requirement is not maintained.

5. Other Issues/notations.

Proposed regulation 28-16-161 and 28-16-162: Item (d)1, which states that the groundwater separation distance must be greater than 10 feet is not needed, as that requirement is already identified in statement (a), which states that new lagoons will be prohibited if the groundwater separation distance is less than 10 feet.

Summary

The City of Wichita reiterates its continued concern over the protection of the Equus Beds Aquifer and believes that higher standards such as those addressed in the proposed regulations are required in areas that are designated as "Sensitive Groundwater Areas". The City of Wichita applauds the idea of increasing statewide groundwater protection standards as well as taking into consideration site-specific information to develop site-specific standards for wastewater treatment lagoons of all types.